

**DKT. 347-14**  
**PUBLIC REDACTED VERSION**

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1                   UNITED STATES DISTRICT COURT  
2                   NORTHERN DISTRICT OF CALIFORNIA  
3                   SAN FRANCISCO DIVISION  
4                   CASE NO. 16-cv-02787-WHO

5                  HUAWEI TECHNOLOGIES CO. LTD.,         )  
6                  HUAWEI DEVICE USA, INC., and             )  
7                  HUAWEI TECHNOLOGIES USA, INC.         ) Case No. 16-cv-02787-WHO  
8   )  
9                  Plaintiffs/Counterclaim                 )  
10                 Defendants,                                 )  
11   )  
12                 v.   )  
13   )  
14                  SAMSUNG ELECTRONICS CO., LTD.,         )  
15                  SAMSUNG ELECTRONICS AMERICA,         )  
16                  INC.,   )  
17   )  
18                  Defendants/Counterclaim-                 )  
19                 Plaintiffs,                                     )  
20   )  
21                 and   )  
22   )  
23                 SAMSUNG RESEARCH AMERICA, INC.,         )  
24   )  
25                 Defendant,                                     )  
26   )  
27                 v.   )  
28   )  
29                 HISILICON TECHNOLOGIES CO., LTD., )  
30   )  
31                 Counterclaim-Defendant.                 )  
32   -----)  
33   DESIGNATED HIGHLY CONFIDENTIAL  
34   ATTORNEYS' EYES ONLY  
35   VIDEOTAPED DEPOSITION OF XUXIN CHENG  
36   VOLUME II  
37   Thursday, March 22, 2018  
38   AT: 9:08 a.m.  
39   Taken at HKIAC  
40   Exchange Square Two  
41   8 Connaught Place  
42   Central, Hong Kong

25   Job No: 139249

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1 VIDEOGRAPHER: This is the start of volume II,  
2 media labeled number 1 of the video recorded deposition of  
3 Xuxin Cheng in the matter of Huawei Technologies Company  
4 Limited et al versus Samsung electronics Company Limited et  
5 al versus HiSilicon Technologies Company Limited, in the  
6 United States District Court, Northern District of  
7 California, San Francisco Division, case  
8 number 16-cv-02787-WHO.

9                   This deposition is being held at the Hong Kong  
10                  International Arbitration Center at 2, Exchange Square, 8,  
11                  Connaught Place, Central, Hong Kong, on March 22nd, 2018, at  
12                  approximately 9.08, a.m.

13                   All who were present yesterday are present today.  
14   Please begin.

15 XUXIN CHENG

16 having been duly affirmed previously testified as follows:  
17 (All answers were given through the main interpreter unless  
18 otherwise stated)

19 BY MR. PLEASE:

Q. Good morning, Mr. Cheng.

21 A. (In English) Good morning.

22 Q. Do you understand you are still under oath  
23 today?

24 A. Yes.

25 O. Yesterday when we broke for the day we were

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1 [REDACTED]  
2 [REDACTED]  
3 [REDACTED]. Third, we found that  
4 Samsung Galaxy 5's sale price was close to US\$500. Using  
5 that methodology, Samsung would have to pay a higher  
6 royalty. Instead, [REDACTED], Samsung's  
7 royalty would be lowered. That's why with respect to LTE we  
8 adopted a methodology that was more favorable to Samsung.

9 Q. Now I take it after Huawei sent this letter no  
10 further meetings were held between the parties until Huawei  
11 sued Samsung in May of 2016, correct?

12 MR. GIARDINA: Objection, foundation.

13 A. That's my understanding, but I can't guarantee  
14 that.

15 BY MR. PEASE:

16 Q. I'm going to hand you what has been marked as  
17 Exhibit 730.

18 (Exhibit 730 marked for identification)

19 Is this a copy of the license agreement that  
20 Huawei entered into with [REDACTED]?

21 A. Yes.

22 Q. And this document is titled [REDACTED]  
[REDACTED]

23 [REDACTED] correct?

24 A. Yes.

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1 Q. And the effective date is [REDACTED]

2 A. (Chinese spoken).

3 INTERPRETER: The interpreter was asked to  
4 re-render the question. (Chinese spoken).

5 A. That was the date when the parties signed the  
6 agreement.

7 BY MR. PEASE:

8 Q. And I take it this agreement was limited to  
9 essential patents?

10 A. If we look at the license --

11 INTERPRETER: Sorry.

12 A. With respect to the licensed standard  
13 definition, that is the case. But the parties had some  
14 other considerations.

15 BY MR. PEASE:

16 Q. What were the other considerations?

17 A. For example, item 2.2, there is "Divested  
18 patent license".

19 Q. And how would you describe what the divested  
20 patent license under 2.2 is intended to do?

21 A. The purpose is to explain that if Huawei  
22 transfer some of its patents to a third party, then for  
23 a period of time [REDACTED] would still be licensed under those  
24 patents. That's just my simplified understanding. With  
25 respect to the precise meaning of that, we still have to

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1 refer to the document.

2 Q. In other words [REDACTED] wanted to make sure if  
3 Huawei transferred away some of the essential patents that  
4 were licensed here [REDACTED] would still retain license rights  
5 to those patents even though they were now owned by  
6 a different entity?

7 MR. GIARDINA: Objection, lack of foundation.

8 A. Within the term of the agreement, that is  
9 true.

10 BY MR. PEASE:

11 Q. Okay. So the license rights that [REDACTED] got  
12 were a license under Huawei's licensed essential patents, as  
13 in 2.1, as well as the rights it got with respect to  
14 divested patents through 2.2?

15 A. Yes.

16 Q. Now since 2011, when Samsung and Huawei first  
17 started talking about a potential cross-license, has Huawei  
18 in fact divested essential patents within its portfolio?

19 A. Are you asking as of today?

20 Q. Yes.

21 A. Yes. But I'm not sure if they are related to  
22 terminal LTE SEPs.

23 Q. No, I was asking more broadly than that.

24 A. Yes.

25 Q. And who are the entities to whom Huawei has

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1 divested standard-essential patents since it first began  
2 talking with Samsung about a potential SEP cross-license in  
3 2011?

4 A. I think there were a few.

5 Q. And who were they?

6 A. For example, the most recent one was [REDACTED].

7 Q. Okay. And then who else?

8 A. I remember there was also [REDACTED]

9 Q. Anyone else besides [REDACTED]?

10 A. I remember there was another one. It is US  
11 NPE, but I just don't recall its name right now.

12 Q. And when approximately was that transfer to  
13 the NPE?

14 A. Probably around 2012, I'm not very sure.

15 Q. Any others come to mind besides [REDACTED]  
[REDACTED] and that US NPE?

17 A. Huawei also transferred some patents to some  
18 small companies in China. But those companies did not have  
19 any specific request with respect to the types of patents,  
20 and those transfers happened quite a few times. I don't  
21 know if the patent transfer would be related to SEPs or not.

22 Q. If you wanted to find out whether SEPs were  
23 transferred to those small companies in China, how would you  
24 figure that out?

25 A. If you are talking about the methodology,

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1 BY MR. PEASE:

2 Q. Earlier before we broke we were talking about  
3 the [REDACTED] and Huawei license which was marked as  
4 Exhibit 730. During the negotiations that led to this  
5 license did the parties ever discuss licensing each other  
6 under any non-SEPs?

7 [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

16 A. You can understand it that way.

17 Q. So in this cross-license, [REDACTED] is licensed as  
18 to terminal equipment that implements a license standard,  
19 correct?

20 I'm looking at 1.8.

21 A. I see 1.8.

22 Q. And so [REDACTED] smartphones and tablets that  
23 implement a license standard are licensed under this --  
24 under Huawei's patents, correct?

25 A. Yes.

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1                   Q. And the license standards that are covered by  
2 this patent are set forth in 1.15, correct?

3                   A. Yes.

4                   Q. And so that would include standards for  
5 cellular telecommunications systems that either were or are  
6 promulgated by ITU, ETSI, TIA, TTA, ARIB, TTC, IEEE, 3GPP,  
7 3GPP2, and EIA, or other similar recognized government  
8 industry-wide or other regulatory authorities, correct?

9                   A. Yes.

10                  Q. And then certain examples are enumerated  
11 specifically below, including GSM/GPRS, which is 2G, right?

12                  A. You can understand it as 2G.

13                  Q. And then the CDMA standard, that's a Qualcomm  
14 derived standard implemented in part by 3GPP2, correct?

15                  A. I agree it is 3GPP. But whether that standard  
16 came from Qualcomm or not, I'm not going to comment on that.

17                  Q. Fair enough.

18                  And then LTE refers to 4G, as we have discussed?

19                  A. Correct. Generally speaking that's the case.

20                  Q. And UMTS, that's generally a 3G standard?

21                  A. Yes.

22                  Q. And I think 2D-SCDMA is a standard developed  
23 by 3GPP and used in China?

24                  A. I think it is mainly in China.

25                  Q. Okay. But the license standards aren't

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1 limited to the five standards listed in (a), (b), (c), (d)  
2 and (e), would cover any standards that fall within the  
3 definition above in 1.15, correct?

4 A. To be more specific, they would be the ones  
5 defined by 1.15.

6 Q. And in fact, even if 5G standards became  
7 implemented within the term of this license, those would be  
8 covered too, correct?

9 A. Theoretically speaking, yes.

10 Q. And to be clear, the patents that are licensed  
11 under this license are essential patents with respect to  
12 those license standards, correct?

13 A. Yes.

14 Q. And the term of this agreement had two parts.  
15 There was an initial term and then an optional extended  
16 term? Is that right?

17 A. Yes.

18 Q. So the initial term was to run until  
19 [REDACTED]

20 A. Yes.

21 Q. And then [REDACTED] had the option of extending the  
22 initial term for another three years through [REDACTED]  
[REDACTED]

24 A. Yes.

25 Q. And it is my understanding [REDACTED] actually did

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1 extend the term [REDACTED]. Is that correct?

2 A. Yes.

3 Q. And the amount that [REDACTED] paid for the rights  
4 under the initial term are set forth under section 5.1?

5 A. Yes.

6 Q. And how much was [REDACTED] required to pay for the  
7 initial term in total?

8 A. It is indicated here [REDACTED].

9 Q. And how much -- I guess [REDACTED] has been making  
10 payments pursuant to the extended term, correct?

11 A. Yes.

12 Q. And how much has Apple been paying for the  
13 extended term?

14 [REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

20 Q. Do you happen to know the actual royalty  
21 amounts that [REDACTED] has paid under the extended term?

22 A. Because that amount would depend on [REDACTED]  
23 sales quantities. So I don't know what time period you are  
24 referring to.

25 Q. I guess for each payment that [REDACTED] has made

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1 under the extended term.

2 MR. GIARDINA: Objection to form.

3 A. Those numbers would be too detailed. I do not  
4 recall.

5 BY MR. PEASE:

6 Q. Now how was the [REDACTED]

7 calculated?

8 A. There was no specific methodology. The  
9 parties just agreed to that.

10 Q. And in fact earlier we talked a little bit  
11 about the negotiations, and we went from a point where  
12 Huawei had proposed, I think it was [REDACTED],  
13 and [REDACTED] rejected it. Is that right?

14 A. Correct.

15 Q. And after that, as I recall, the parties began  
16 discussing a lump sum payment?

17 A. Yes.

18 Q. In coming to an agreement as to the lump sum  
19 amount to be paid by [REDACTED] did the parties exchange their  
20 positions on what the one-way effective royalty rates would  
21 be under each other's licensed SEPs?

22 A. I don't recall that was discussed.

23 Q. Do you recall whether the parties ever  
24 exchanged -- information relating to one-way effective  
25 royalty rates under this license agreement?

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1           A. I don't recall that.

2           Q. Did Huawei or [REDACTED] ever, to your -- I will  
3 withdraw that.

4           In negotiating the terms of the Huawei [REDACTED]  
5 cross-license, did the parties attempt to apportion the  
6 value attributable to each party's SEPs?

7           MR. GIARDINA: Objection, form.

8           A. I don't recall that was discussed.

9 BY MR. PEASE:

10          Q. And has Huawei calculated the effective  
11 royalty rate that [REDACTED] is paying Huawei for rights to  
12 licensed SEPs under this license?

13          MR. GIARDINA: Mr. Cheng, I will caution you not  
14 to answer the question to the extent that any such  
15 calculation has been undertaken in connection -- either with  
16 the rendering of legal advice or in connection with  
17 litigation.

18          Shall I repeat the objection or have you  
19 translated it.

20          INTERPRETER: I just interpreted it.

21          A. (Chinese spoken).

22          INTERPRETER: I interpreted the objection, but  
23 I didn't interpret the question. Let me do that right now.

24          A. I think I answered this question in the  
25 morning. We didn't calculate -- we didn't calculate that

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1 with respect to [REDACTED]

2 BY MR. PEASE:

3 Q. Now in negotiating with [REDACTED] did the parties  
4 discuss the relative strength of their SEP portfolios?

5 A. I remember we did that.

6 Q. And what measures of portfolio strength did  
7 Huawei consider when it evaluated the [REDACTED] SEP portfolio?

8 A. At least in the negotiation, Huawei presented  
9 the report from CyberCreative, among other materials we  
10 presented to [REDACTED]

11 Q. What other materials did Huawei present to  
12 [REDACTED] in that regard?

13 A. I'm not very sure right now. But based on my  
14 experience, with respect to negotiations, generally, we  
15 would also present the ABI report.

16 Q. And was the purpose of presenting the  
17 CyberCreative report to show that Huawei has more declared  
18 essential telecommunications patents than [REDACTED]

19 A. I think it was not solely a demonstration of  
20 the numbers. I think Huawei wanted to show to [REDACTED] the  
21 strength of Huawei's SEP portfolio, evaluated by a third  
22 party.

23 Q. By that you are referring to the CyberCreative  
24 report?

25 A. Yes.

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1                   Q. How did Huawei use the ABI report in its  
2 presentation to [REDACTED]

3                   A. I think we also presented that in order to  
4 show the number of contributions or proposals we made in the  
5 different standards.

6                   INTERPRETER: Interpreter correction. "I think we  
7 also presented that in order to show the number of  
8 contributions or proposals we made, and the position of  
9 Huawei in relationship to others."

10                  A. The information would be similar to those we  
11 showed to Samsung.

12 BY MR. PEASE:

13                  Q. Were there any other measures of portfolio  
14 strength that Huawei considered when evaluating [REDACTED] SEP  
15 portfolio in the context of those negotiations?

16                  A. I think [REDACTED] was mentioned in the  
17 CyberCreative report. The parties also exchanged some  
18 patents for discussions.

19                  Q. You say exchanged some patents. You mean  
20 claim charts on patents?

21                  A. Yes.

22                  Q. And what kind of -- well how many claim charts  
23 did [REDACTED] and Huawei provide each other?

24                  A. If I remember correctly, Huawei provided  
25 around 15 of those.

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1 Q. And for what standards were those patents  
2 declared essential?

3 A. If I remember correctly, they were mainly  
4 related to LTE standard of -- very few of them were about  
5 UMTS standard.

6 Q. Any other standards besides LTE or UMTS?

7 A. I don't recall.

8 Q. Now for the extended term, [REDACTED]

[REDACTED]  
[REDACTED] correct?

11 A. To put it more precisely, the payments should  
12 be made according to section 5.4 and section 1.12.

13 Q. And pursuant to those two provisions the  
14 payments are based at least in part on [REDACTED]

[REDACTED] sells?

16 A. Yes.

17 Q. Or to put it more precisely, in 1.12 it  
18 provides that the extended term [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED] correct?

22 A. Yes.

23 Q. Do you know what the extended term per unit  
24 payment is?

25 A. I do.

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1

[REDACTED]  
[REDACTED]

3 Q. Okay. Were there any other patent transfers  
4 between -- I withdraw that.

5 Were there any other side deals to this agreement  
6 that Huawei and [REDACTED] entered into?

7 A. To my understanding, the parties did not have  
8 any other written agreements with respect to that.

9 Q. Did Huawei seek the approval of the Chinese  
10 government to enter into this license agreement with [REDACTED]?

11 A. My understanding is that it is not necessary  
12 to obtain the approval from the Chinese government when  
13 entering into a license agreement.

14 Q. Was the Chinese government involved in any  
15 way, to your knowledge, in the negotiation or execution of  
16 this agreement between Huawei and [REDACTED]?

17 A. First, there was no involvement from the  
18 Chinese government, and secondly, prior to the signing of  
19 the license agreement, no approval was required by the  
20 Chinese government. However, after the license agreement  
21 has been entered into, Huawei needed to report that to the  
22 government according to the Chinese technology export  
23 regulations. I don't know if that is a type of approval.

24 Q. Okay.

25 A. There is another thing -- well, that is not

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1 related to payments to Huawei. Let me withdraw that.

2 Q. Am I correct that [REDACTED] manufactures all of  
3 its smartphone products, [REDACTED],  
4 in China?

5 MR. GIARDINA: Objection, foundation.

6 A. I don't have the ability to confirm that, or  
7 negate that.

8 BY MR. PEASE:

9 Q. But was an assumption, when you entered into  
10 license negotiations with [REDACTED], that [REDACTED] products all  
11 or substantially all had exposure to Huawei's Chinese  
12 standard essential patents?

13 A. We did not make any assumption. The parties  
14 negotiated a global agreement.

15 Q. And as part of that negotiation was there any  
16 discussion of exposure in different geographic areas?

17 A. I don't think it was in that detail.

18 Q. Okay. I'm going to hand you what has been  
19 marked as Exhibit 731. Am I correct this is a patent  
20 license agreement entered into between [REDACTED]

21 [REDACTED] [REDACTED] as it has sometimes known,  
22 Shenzhen Huawei Investment Holding Company Limited, and  
23 Huawei Technologies Company Limited.

24 (Exhibit 731 marked for identification)

25 A. My understanding is that this is an expired

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1

## 2 CERTIFICATE OF COURT REPORTER

3

4 I, Bron Williams, an Accredited Real-time Reporter, hereby  
5 certify that the testimony of the witness Xuxin Cheng in the  
6 foregoing transcript, numbered pages 150 through 280, taken  
7 on this 22nd day of March, 2018 was recorded by me in  
8 machine shorthand and was thereafter transcribed by me; and  
9 that the foregoing transcript is a true and accurate  
10 verbatim record of the said testimony.

11

12

13 I further certify that I am not a relative, employee,  
14 counsel or financially involved with any of the parties to  
15 the within cause, nor am I an employee or relative of any  
16 counsel for the parties, nor am I in any way interested in  
17 the outcome of the within cause.

18

19

20 Signed: .....

21 Name: Bron Williams

22 Date: March 27th, 2018

23

24

25

**EXHIBIT 2**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

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UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION

\*\* HIGHLY CONFIDENTIAL -- ATTORNEYS' EYES ONLY \*\*  
VIDEOTAPED DEPOSITION OF NANFEN "NANCY" YU  
FRIDAY, MAY 11, 2018, 9:09 A.M.  
CENTRAL, HONG KONG

REPORTED BY:  
CHERYL M. HAAB, CSR, RPR, CLR  
Job No. 141997

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<sup>1</sup> in-house counsel for Huawei Technologies.

2 THE VIDEOGRAPHER: Will the court reporter  
3 please swear in the interpreters and witness.

4 (Whereupon, the witness was duly sworn by the  
5 court reporter.)

6 MR. PLEASE: Just so the record is clear, I  
7 don't think there are any interpreters here today.

—○○○—

## EXAMINATION

BY MR. PEASE:

Q      Good morning, Ms. Yu.

A Good morning.

Q Can you state your name for the record, please.

A Yes. My first name is Nanfen, N-a-n-f-e-n; last name is Yu.

Q And do you go by Nancy Yu?

A Yes.

Q I take it you're employed by Huawei?

A Yes.

Q Which specific entity at Huawei are you employed by?

A Huawei Technologies

O And you work in Shenzhen?

A Yes.

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1           What was your role in those negotiations?

2       A    I'm also working on the license --  
3           negotiating the licensing agreements with  
4           InterDigital.

5       Q    You took part in meetings with people from  
6           InterDigital?

7       A    Yes.

8       Q    And who else worked on the negotiation of the  
9           InterDigital license agreement within your  
10          department?

11      A    Alan Fan.

12      Q    Anyone else?

13      A    Dr. Song also attended several meetings.

14      Q    Anyone else?

15      A    There could be somebody from the technical  
16          team, but I cannot remember the names now.

17      Q    Anyone else from the licensing department  
18          that comes to mind?

19      A    No.

20      Q    Now, what about the negotiations with [REDACTED]  
21          What was your role in those negotiations?

22      A    I'm also working on the license agreement,  
23          negotiating a license agreement with [REDACTED]

24      Q    So you met with people from [REDACTED] in  
25          connection with the negotiation of that license

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1 agreement?

2 A Yes.

3 Q Who else from Huawei was involved in those  
4 negotiations?

5 A Mr. Cheng.

6 Q Xuxin Cheng?

7 A Yes.

8 Q Anyone else?

9 A Liang Wang; first name J-i-n-g-l-i-a-n-g;  
10 last name W-a-n-g.

11 Q Is he still with Huawei?

12 A Yes.

13 Q Is there anyone else besides Mr. Wang and  
14 yourself and Mr. Cheng that negotiated with [REDACTED]

15 A Jason Ding and Dr. Song also attended several  
16 meetings.

17 Q And did you help draft the license agreement  
18 that was ultimately signed with [REDACTED]

19 A Yes.

20 Q And you're familiar with its terms?

21 A Yes.

22 Q Now, have you ever had your deposition taken  
23 before?

24 A Yes.

25 Q How many times?

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1 license agreement that we finally executed.

2 Q And why was that?

3 A Because the parties had not been able to  
4 agree with the scope and the mechanism to include  
5 nonessential patents.

6 Q And so how did the parties leave it with  
7 respect to nonessential patents when they executed  
8 the SEP cross-license?

9 A I think the parties, although not including  
10 nonessential patents, it's agreed to some extent  
11 between the parties that there would be a peace for  
12 nonessential patents between the parties, although  
13 is not putting in writing.

14 Q And what was the nature of that agreement as  
15 to patent peace with respect to nonessential  
16 patents?

17 A [REDACTED] expressed they would not actually  
18 assert against Huawei.

19 Q And who from [REDACTED] said that?

20 A I cannot remember clearly.

21 Q Did they say that once, or was it multiple  
22 times?

23 A As far as I remember, they said that multiple  
24 times.

25 Q And who were the people at [REDACTED] who

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1 referring to?

2 Q Yeah, I'm in Section 3.4. About this far  
3 down. Starting "Without limiting."

4 A Can you repeat the question.

5 Q Sure. So Section 3.4 goes on and says:

6 "Without limiting the generality of the  
7 foregoing, nothing contained herein shall prevent  
8 [REDACTED] from asserting or pursuing any infringement  
9 claims against Huawei, other than patent  
10 infringement claims under [REDACTED] licensed essential  
11 patents within the scope of Section 3.1 and  
12 Article 4, and [REDACTED] divested patents within the  
13 scope of Section 3.2."

14 Is that right?

15 A Yes.

16 Q And so [REDACTED] specifically reserving the  
17 right to assert nonessential patents and other  
18 nonlicensed patents against Huawei, if Huawei  
19 infringes those patents; correct?

20 A So this is a general provision that's in each  
21 license agreement. People would just have this kind  
22 of provision to make sure that the license is only  
23 limited to what is expressly provided under the  
24 agreement itself, but we don't see, based on the  
25 context of our negotiation back in years ago, that

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1 there is any clear intention of [REDACTED] by adding this  
2 sentence to expressly reserve any rights under  
3 nonessential patents to claim against Huawei.

4 Q But it actually says that "nothing herein  
5 shall prevent [REDACTED] from asserting or pursuing any  
6 infringement claims against Huawei, other than  
7 patent infringement claims under licensed essential  
8 patents or divested patents"; right?

9 A This is what it says, and it does not suggest  
10 any intention there, but it's a general provision  
11 that each license agreement would have.

12 Q And so this license agreement, because it has  
13 that provision, would allow [REDACTED] if it chose to do  
14 so, to sue Huawei on any patents that weren't  
15 licensed under this agreement, which would include  
16 nonessential patents; correct?

17 A Can you rephrase the question?

18 Q So this license agreement, because it  
19 contains this language that we just talked about,  
20 [REDACTED] is allowed to assert any nonlicensed patents  
21 against Huawei for infringement, other than licensed  
22 essential patents and divested patents?

23 A Yes.

24 Q And, in fact, if [REDACTED] sued Huawei for  
25 infringement of a nonessential patent tomorrow, you

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1 A No. I was not allowed to be present.

2 Q I see. Did you see any of the witness  
3 statements that Professor Gilbert or other expert  
4 witnesses submitted on Huawei's behalf?

5 A No.

6 MR. PLEASE: All right. I have no further  
7 questions.

8 MR. GIARDINA: Okay. I have just got a  
9 couple. I don't think there's a need for us to  
10 reconfigure.

11 --oo--

12 EXAMINATION

13 BY MR. GIARDINA:

14 Q Ms. Yu, I want to turn back to the Apple  
15 license.

16 You recall being asked questions about that  
17 earlier this afternoon?

18 A Yes.

19 Q And if I recall your testimony correctly, you  
20 indicated that you recall individuals from Apple  
21 having said that Apple didn't intend to assert its  
22 nonstandard essential patents against Huawei; is  
23 that correct?

24 A Yes.

25 Q And you recall them having said that on more

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1 than one occasion?

2 A Correct.

3 Q But you don't recall specifically who said  
4 it?

5 A I don't recall the specific date and the  
6 specific person who said that.

7 Q Okay. So when you testified in response to  
8 Mr. Pease's question that you didn't have a specific  
9 recollection of Apple having said it, it didn't  
10 intend to assert its implementation patents against  
11 Huawei, what did you mean by that?

12 A I mean I don't recall the specific date and  
13 the specific person who said that.

14 Q To your knowledge, has Apple sued Huawei with  
15 respect to any patents in the period since the 2014  
16 license agreement was entered?

17 A No.

18 Q Huawei makes smartphones that use the Android  
19 operating system. Are you familiar with that?

20 A Yes.

21 Q And to your knowledge, has Apple sued other  
22 makers of smartphones that use the Android operating  
23 system?

24 A Yes.

25 MR. GIARDINA: No further questions.

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1           MR. PEASE: I just have one or two follow-up  
2 questions.

3                             --oo--

4                             FURTHER EXAMINATION

5           BY MR. PEASE:

6           Q    Am I correct that, currently, Huawei does not  
7 sell very many Android smartphone products in the  
8 United States?

9           A    We have very limited sales in the U.S. in  
10 general.

11          Q    And am I correct that you have no personal  
12 knowledge of why Apple has not sued Huawei for  
13 infringement of any nonessential patents in the  
14 United States?

15          A    We do have clear expectation that Apple will  
16 not sue Huawei for -- under nonessential patents.

17          Q    No, but that's not what I was asking. I'll  
18 move to strike that.

19                         What I'm asking is, am I correct you have no  
20 personal knowledge as to why Apple has not, for  
21 whatever reason, decided to sue Samsung -- sorry --  
22 I'll withdraw that.

23                         Am I correct that you have no personal  
24 knowledge as to why Apple has not, for whatever  
25 reason, decided to sue Huawei for infringement of

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1 any nonessential patents?

2 A I don't have any knowledge of Apple's  
3 decisions or how they think about it, but based on  
4 our previous negotiations, Huawei do have clear  
5 expectation that Apple would not do that.

6 Q And that clear expectation is based on the  
7 statements you mentioned earlier, that you couldn't  
8 attribute to a specific person at Apple, but you  
9 recall having been made during the negotiations?

10 A Yes.

11 Q Is there any other basis for that expectation  
12 than those statements?

13 A Not that I can remember.

14 MR. PEASE: Okay. All right. That's it for  
15 me.

16 MR. GIARDINA: Good.

17 THE VIDEOGRAPHER: Going off the record at  
18 14:25.

19 (Time noted: 2:25 p.m.)

20

21

22

---

23 NANFEN "NANCY" YU

24

25

**EXHIBIT 3**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

1 UNITED STATES DISTRICT COURT

2 NORTHERN DISTRICT OF CALIFORNIA

3 SAN FRANCISCO DIVISION

4 x

5 HUAWEI TECHNOLOGIES CO. LTD. :  
HUAWEI DEVICE USA, INC., AND

6 HUAWEI TECHNOLOGIES USA, INC., :  
Plaintiffs/ : Case No.

7 Counterclaim-Defendants, : 16-cv-02787-WHO

8 v. :  
SAMSUNG ELECTRONICS CO. LTD., :  
SAMSUNG ELECTRONICS AMERICA, INC.

9 Defendants/ :  
Counterclaim-Plaintiffs. :  
x

10 11 12 13 CONFIDENTIAL BUSINESS INFORMATION

14 15 UNDER THE PROTECTIVE ORDER

16 Video Deposition of SAMSUNG,

17 by and through its Designated Representative,

18 HOJIN CHANG

19 Seoul, South Korea

20 Friday, March 2, 2018

21 9:03 a.m.

22  
23 Job No. 176369

24 Pages 1 - 266

25 Reported by: Anne M. Torreano, CSR, RPR, CCRR, CLR

## CBI UNDER THE PROTECTIVE ORDER

## Transcript of Hojin Chang, Corporate Designee

Conducted on March 2, 2018

9

1	FRIDAY, MARCH 2, 2018; 9:03 A.M.	09:02:23
2	THE VIDEOGRAPHER: Here begins Media No. 1	09:02:23
3	in the video deposition of Hojin Chang in the matter	09:02:33
4	of Huawei Technologies Company, Limited, et al.,	09:02:37
5	versus Samsung Electronics Company, Limited, et al.,	09:02:41
6	in the United States District Court, Northern	09:02:44
7	District of California, San Francisco Division, Case	09:02:46
8	No. 16-cv-02787-WHO.	09:02:51
9	Today's date is March 2nd, 2018. The time	09:02:54
10	on the video monitor is 09:03. The videographer	09:03:04
11	today is Hong Wing To on behalf of Planet Depos.	09:03:09
12	This legal deposition is taking place at	09:03:14
13	Grand Hyatt Seoul, Yongsan-gu, Seoul, South Korea.	09:03:17
14	Will counsel please voice identify	09:03:21
15	themselves and state whom they represent?	09:03:24
16	The court reporter today is Anne Torreano,	09:03:27
17	on behalf of Planet Depos.	09:03:30
18	Would the reporter please swear in the	09:03:32
19	interpreters and the witness?	09:03:36
20	MR. GIARDINA: This is David Giardina from	09:03:41
21	Sidley Austin LLP on behalf of the Huawei	09:03:43
22	plaintiffs, and with me is my colleague, Leif	09:03:47
23	Peterson.	09:03:49
24	MR. PEASE: Tom Pease, Quinn Emanuel, on	09:03:50
25	behalf of the Samsung defendants. With me is Kevin	09:03:54

## CBI UNDER THE PROTECTIVE ORDER

## Transcript of Hojin Chang, Corporate Designee

Conducted on March 2, 2018

166

1	Samsung had than Huawei?	03:29:31
2	A. I think that might be in our presentation.	03:29:36
3	Q. And then if we just go down to the next	03:29:41
4	page, it says in the text at the bottom, you know,	03:29:44
5	"Huawei LTE handset shipments are" -- or rather,	03:29:50
6	[REDACTED]	03:30:00
7	[REDACTED]	03:30:03
8	Do you see that?	03:30:06
9	A. Yes, I see that sentence.	03:30:07
10	[REDACTED]	03:30:09
11	[REDACTED]	03:30:17
12	[REDACTED]	03:30:21
13	[REDACTED]	03:30:30
14	[REDACTED]	03:30:34
15	[REDACTED]	03:30:38
16	MR. PEASE: Objection. Incomplete	03:30:39
17	hypothetical.	03:30:40
18	THE WITNESS: I think various factors need	03:30:41
19	to be considered. Not just the handset sales. They	03:30:48
20	have a huge infrastructure. You also have to take	03:30:53
21	the future sales because normally negotiation also	03:30:58
22	cover future.	03:31:01
23	And so Huawei was rapidly growing, and they	03:31:03
24	did grow after that. And the patent is not just a	03:31:07
25	number patent but should be essential patents. So	03:31:12

## CBI UNDER THE PROTECTIVE ORDER

Transcript of Hojin Chang, Corporate Designee

Conducted on March 2, 2018

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1	there are many, many factors that go into how much	03:31:16
2	one company pays the other.	03:31:22
3	BY MR. GIARDINA:	03:31:24
4	Q. Sure. But basically on one side of the	03:31:24
5	equation you've got sales exposure, past and future,	03:31:27
6	and then, you know, you've got relative value of the	03:31:31
7	two sets of patent portfolios, however measured;	03:31:36
8	right?	03:31:39
9	And those are the two fundamental variables	03:31:39
10	that drive who pays whom in a cross license; right?	03:31:43
11	A. No. I think that there are many other	03:31:47
12	factors, whether they're manufacturing companies and	03:31:52
13	what relationship they have with us. So it's not	03:31:56
14	true that two large companies just use this formula	03:32:00
15	to create a royalty.	03:32:05
16	Q. So in your experience, things like the	03:32:06
17	state of the relationship between the companies can	03:32:13
18	drive the terms of license between them?	03:32:15
19	A. It could be a factor. It might not be a	03:32:23
20	factor. But there are many situations. It varies.	03:32:25
21	Q. Okay. It would be true that sometimes	03:32:29
22	those kinds of factors, the relationship between the	03:32:33
23	parties, for example, might not be apparent on the	03:32:35
24	face of the license. You'd need some context to	03:32:37
25	understand their relationship?	03:32:40

## CBI UNDER THE PROTECTIVE ORDER

## Transcript of Hojin Chang, Corporate Designee

Conducted on March 2, 2018

168

1	A. Could you repeat the question?	03:32:43
2	Q. Sure.	03:32:47
3	It would be true sometimes that those kinds	03:32:48
4	of factors, like the relationship between the	03:32:53
5	parties, might not be apparent on the face of the	03:32:56
6	license, that you would need some context beyond the	03:32:58
7	license itself to be able to understand it?	03:33:01
8	MR. PEASE: Objection. Vague.	03:33:05
9	THE WITNESS: Yeah, I -- I don't know	03:33:06
10	exactly what you meant by that, but my understanding	03:33:11
11	is you -- you consider those factors.	03:33:13
12	Manufacturers, it varies from case to case. And	03:33:18
13	to -- to have a royalty is not just the sales, but	03:33:22
14	those -- all those factors should be considered.	03:33:27
15	BY MR. GIARDINA:	03:33:33
16	Q. Can it be consistent with FRAND to take	03:33:33
17	account of those kind of things, like the	03:33:37
18	relationship of the parties?	03:33:40
19	MR. PEASE: Object to the extent it calls	03:33:42
20	for a legal conclusion.	03:33:43
21	Caution you not to reveal the substance of	03:33:47
22	any attorney-client communications or work product.	03:33:49
23	THE WITNESS: Could you repeat the	03:33:52
24	question?	03:33:59
25	BY MR. GIARDINA:	03:34:00

## CBI UNDER THE PROTECTIVE ORDER

## Transcript of Hojin Chang, Corporate Designee

Conducted on March 2, 2018

169

1	Q. Sure.	03:34:00
2	Can it be consistent with FRAND to take	03:34:01
3	account of those kinds of things, like the	03:34:04
4	relationship of the parties?	03:34:06
5	MR. PEASE: Same objections.	03:34:08
6	THE WITNESS: I -- I think fair and	03:34:09
7	reasonable, when I understand it, is tied to the --	03:34:18
8	tied to the value of the patented technology. That	03:34:22
9	excludes patentholder value, and that should also	03:34:25
10	not include the increase of the value just by merely	03:34:29
11	being included in the patent.	03:34:33
12	So the fair and reasonable is a very	03:34:36
13	complicated term, and I think all those need to be	03:34:39
14	accounted for when making the FRAND determination.	03:34:45
15	BY MR. GIARDINA:	03:34:50
16	Q. Yeah, I guess I -- you were suggesting that	03:34:50
17	there were factors other than the rate, you know,	03:34:55
18	the relative rates and the relative sales exposures	03:34:57
19	that really can influence the final terms of a	03:35:00
20	license agreement.	03:35:05
21	Is that a fair summary of your testimony	03:35:09
22	earlier?	03:35:11
23	A. Yeah. Yeah, so what I'm saying is like I	03:35:11
24	stated before. FRAND, fair and reasonable, is --	03:35:17
25	considers those factors, but in my experience in our	03:35:21

## CBI UNDER THE PROTECTIVE ORDER

## Transcript of Hojin Chang, Corporate Designee

Conducted on March 2, 2018

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1	licensing negotiations, we have had many, many	03:35:25
2	successful licenses which didn't go through -- which	03:35:28
3	didn't need to use the methodology, but both are	03:35:33
4	parties happy.	03:35:39
5	So I think that's the normal course of	03:35:39
6	conducting licenses that include essential patents.	03:35:43
7	Q. So I think I understand. What you're	03:35:46
8	saying is the normal course of licensing for	03:35:48
9	essential patents doesn't always involve a detailed	03:35:51
10	explanation of the basis for the rates and the	03:35:56
11	strict calculation of balancing payment rate versus	03:36:00
12	exposure?	03:36:04
13	A. Not always, but it could be considered, but	03:36:04
14	other factors are considered.	03:36:10
15	Q. And just to be clear, among those factors	03:36:11
16	are things that are -- are like the relationship of	03:36:14
17	the parties?	03:36:22
18	A. Yeah, so if you consider a relationship and	03:36:25
19	you factor that in your lump sum amount, that --	03:36:29
20	from my personal view, that doesn't mean that, oh,	03:36:34
21	you violated FRAND obligation.	03:36:38
22	Q. At the conclusion of the meeting between	03:36:44
23	Dr. Ahn and Dr. Song, am I right that there was a	03:36:54
24	consensus between the parties that you were going to	03:37:01
25	negotiate with the goal of reaching an agreement by	03:37:04

## CBI UNDER THE PROTECTIVE ORDER

## Transcript of Hojin Chang, Corporate Designee

Conducted on March 2, 2018

185

1 graph. But what's not apparent from this graph is 03:57:52  
2 that Samsung's total contributions to RAN1 and 2 03:57:55  
3 exceed Huawei's. 03:57:58

4 MR. PEASE: Objection. Compound, assumes 03:58:01  
5 facts not in evidence. 03:58:02

6 THE WITNESS: I don't know. 03:58:03

7 BY MR. GIARDINA: 03:58:07

8 Q. Do you know whether Huawei has more or less 03:58:07  
9 contributions to RAN1 and 2 than Samsung? 03:58:15

10 A. Sitting here today, I don't know. Maybe if 03:58:18  
11 somebody analyzed this, they might know. 03:58:29

12 Q. Sure. But the takeaway from slide -- the 03:58:32  
13 slide that you've pointed us to with Bates number 03:58:35  
14 908 is that the party with greater contributions to 03:58:38  
15 RAN1 and 2 is the party that has the stronger LTE 03:58:41  
16 portfolio; right? 03:58:46

17 A. What we meant was that LTE patents could 03:58:49  
18 cover Air Interface or Network, but the size of the 03:58:53  
19 revenues and the size of the market is much greater. 03:59:02  
20 And the litigations are mostly focused on interface 03:59:05  
21 protocols, so we believe that those patents are much 03:59:11  
22 more relevant. 03:59:14

23 Q. Okay. And you think a proxy for figuring 03:59:15  
24 out who's got the patents in a particular area is to 03:59:20  
25 look at who made the contributions in that area. 03:59:23

## CBI UNDER THE PROTECTIVE ORDER

## Transcript of Hojin Chang, Corporate Designee

Conducted on March 2, 2018

186

1	That's the data that you presented?	03:59:26
2	A. That's one way to estimate.	03:59:31
3	Q. Sure.	03:59:32
4	You are aware of studies that have been	03:59:37
5	done to try to analyze patents that have been	03:59:50
6	declared essential to see if they really are	03:59:53
7	essential, I take it, just from your experience in	03:59:56
8	the industry?	03:59:57
9	A. I know there are some reports, yes.	03:59:59
10	Q. Are there any such reports that you've	04:00:05
11	particularly utilized in your work for Samsung?	04:00:09
12	A. My personal view is -- the one that I	04:00:13
13	looked at was the one in the proposal.	04:00:19
14	Q. Okay. So you're not familiar with any	04:00:22
15	other such studies. The one in the proposal was	04:00:24
16	performed by the Taiwan Patent Office?	04:00:26
17	A. Yes.	04:00:28
18	Q. And that's the one you're familiar with?	04:00:28
19	A. Yeah.	04:00:30
20	Q. A question: Do you read Chinese? Are you	04:00:31
21	able to read Chinese?	04:00:36
22	A. No.	04:00:37
23	Q. Okay. Me either. But that will become	04:00:38
24	relevant in a couple of minutes.	04:00:44
25	Are you familiar with a study done of the	04:00:47

CBI UNDER THE PROTECTIVE ORDER

Transcript of Hojin Chang, Corporate Designee

Conducted on March 2, 2018

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1 ACKNOWLEDGEMENT OF DEPONENT

2  
3 I, HOJIN CHANG, do hereby acknowledge that  
4 I have read and examined the foregoing testimony,  
5 and the same is a true, correct and accurate  
6 transcription of the testimony given by me, and any  
7 corrections appear on the attached Errata sheet  
8 signed by me.

9  
10  
11 (DATE) (SIGNATURE)  
12  
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14  
15  
16  
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**EXHIBIT 4**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

1 UNITED STATES DISTRICT COURT

2 NORTHERN DISTRICT OF CALIFORNIA

3 SAN FRANCISCO DIVISION

4 x

5 HUAWEI TECHNOLOGIES CO. LTD. :  
HUAWEI DEVICE USA, INC., AND

6 HUAWEI TECHNOLOGIES USA, INC., :  
Plaintiffs/ : Case No.

7 Counterclaim-Defendants, : 16-cv-02787-WHO

8 v. :  
SAMSUNG ELECTRONICS CO. LTD., :  
SAMSUNG ELECTRONICS AMERICA, INC.

9 Defendants/ :  
Counterclaim-Plaintiffs. :  
x

10 11 12 13 14 SAMSUNG CONFIDENTIAL BUSINESS INFORMATION  
15 UNDER THE PROTECTIVE ORDER  
16 Video Deposition of SAMSUNG,  
17 by and through its Designated Representative,  
18 JONG-PIL HONG  
19 Seoul, South Korea  
20 Wednesday, February 28, 2018  
21 9:18 a.m.  
22  
23 Job No. 176359  
24 Pages 1 - 233  
25 Reported by: Anne M. Torreano, CSR, RPR, CCRR, CLR

## SAMSUNG CBI UNDER THE PROTECTIVE ORDER

Transcript of Jong-Pil Hong, Corporate Designee

Conducted on February 28, 2018

8

1	WEDNESDAY, FEBRUARY 28, 2018; 9:18 A.M.	09:17:25
2	THE VIDEOGRAPHER: Here begins Video No. 1	09:17:25
3	in the video deposition of JP Hong, in the matter of	09:17:30
4	Huawei Technologies Company, Limited, et al., versus	09:17:39
5	Samsung Electronics Company, Limited, et al., in the	09:17:40
6	United States District Court, Northern District of	09:17:42
7	California, San Francisco Division, Case No.	09:17:45
8	16-cv-02787-WHO.	09:17:50
9	Today's date is February 28, 2018. The	09:17:55
10	time on the video monitor is 09:18.	09:18:01
11	The videographer today is Hon Wing To, on	09:18:06
12	behalf of Planet Depos.	09:18:09
13	This video deposition is taking place at	09:18:11
14	Grand Hyatt Seoul, Yongsan-gu, Seoul, Korea.	09:18:14
15	Will counsel please voice identify	09:18:20
16	themselves and state whom they represent?	09:18:23
17	The court reporter today is Anne Torreano,	09:18:25
18	on behalf of Planet Depos.	09:18:28
19	Would the reporter swear in the	09:18:30
20	interpreters and the witness?	09:18:32
21	THE REPORTER: All right. You want to do	09:18:41
22	the stipulation first?	09:18:41
23	MR. GIARDINA: Sure.	09:18:41
24	My name is David Giardina from Sidley	09:18:41
25	Austin, LLP, on behalf of Huawei parties, with me --	09:18:43

## SAMSUNG CBI UNDER THE PROTECTIVE ORDER

Transcript of Jong-Pil Hong, Corporate Designee

Conducted on February 28, 2018

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1	start out below where it anticipates the negotiation	11:27:05
2	is likely to ultimately land?	11:27:10
3	MR. PEASE: Objection. Vague.	11:27:13
4	THE WITNESS: Typically, I'm never sure	11:27:14
5	where it's going to end up.	11:27:19
6	BY MR. GIARDINA:	11:27:40
7	Q. Can you turn with me to paragraph 31 of	11:27:40
8	Exhibit 604? I want to direct you to the last	11:27:44
9	sentence on that page carrying over to the next	11:27:47
10	page.	11:27:52
11	And in that sentence, Mr. Stasik writes	11:27:52
12	that the royalty rate agreed as a result of FRAND	11:27:58
13	negotiations in which he's been involved has	11:28:01
14	excepted on factors such as the negotiating	11:28:04
15	positions of the parties, the commercial	11:28:07
16	relationship between them, the reputational strength	11:28:09
17	of the patent portfolios, and the willingness of	11:28:12
18	licensees to engage in a good-faith attempt to	11:28:15
19	secure a license.	11:28:19
20	Do you see that?	11:28:20
21	A. Yes, I see that sentence.	11:28:21
22	Q. And I want to ask whether in your -- or in	11:28:23
23	Samsung's experience in licensing whether these same	11:28:27
24	factors have had an effect on the result of, you	11:28:31
25	know, FRAND negotiations. So let's start with the	11:28:40

## SAMSUNG CBI UNDER THE PROTECTIVE ORDER

Transcript of Jong-Pil Hong, Corporate Designee

Conducted on February 28, 2018

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1	negotiating positions of the parties.	11:28:44
2	Does that have an effect on the outcome of	11:28:45
3	negotiations subject to FRAND undertakings?	11:28:52
4	MR. PEASE: Objection. Lacks foundation,	11:28:56
5	outside the scope.	11:28:58
6	THE WITNESS: I don't understand the	11:28:58
7	question.	11:28:59
8	BY MR. GIARDINA:	11:28:59
9	Q. Let's talk about the commercial	11:28:59
10	relationship between the parties.	11:29:09
11	Do you agree that the commercial	11:29:11
12	relationship between the parties can appropriately	11:29:12
13	influence what is FRAND in a particular licensing	11:29:14
14	negotiation?	11:29:21
15	MR. PEASE: Objection. Lacks foundation,	11:29:22
16	outside the scope.	11:29:24
17	THE WITNESS: I don't know. I mean, I	11:29:25
18	think a commercial relationship is a factor in a	11:29:29
19	licensing discussion between parties.	11:29:32
20	BY MR. GIARDINA:	11:29:35
21	Q. Can a holder of standard essential patents	11:29:35
22	subject to a FRAND undertaking give more	11:29:42
23	advantageous terms to a counterparty that's, say, a	11:29:48
24	customer of it as opposed to somebody who it doesn't	11:29:53
25	have a business relationship with?	11:29:56

## SAMSUNG CBI UNDER THE PROTECTIVE ORDER

Transcript of Jong-Pil Hong, Corporate Designee

Conducted on February 28, 2018

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1	MR. PEASE: Objection. Lacks foundation,	11:29:57
2	outside the scope, calls for a legal conclusion,	11:30:00
3	hypothetical, improper hypothetical.	11:30:02
4	THE WITNESS: I don't know, but it could be	11:30:08
5	a factor to give a reduction or maybe, I guess, go	11:30:10
6	either way. I'm not sure, but I guess it could be a	11:30:14
7	factor.	11:30:17
8	BY MR. GIARDINA:	11:30:17
9	Q. In your experience, has the commercial	11:30:17
10	relationship within the parties with whom you've	11:30:26
11	negotiated affected the approach you've taken to the	11:30:29
12	terms you've offered on behalf of Samsung?	11:30:32
13	A. I don't remember cases where that was a	11:30:35
14	factor, from my personal experience.	11:30:52
15	Q. Are you aware of any cases in which that	11:30:53
16	was a factor for Samsung beyond, you know,	11:30:57
17	negotiations in which you were personally involved?	11:31:00
18	A. No, I do not.	11:31:02
19	Q. The last factor that Mr. Stasik mentioned	11:31:05
20	in that list of factors that may influence the	11:31:09
21	outcome of FRAND negotiation was the willingness of	11:31:12
22	the licensee to engage in good-faith attempts to	11:31:15
23	secure a license.	11:31:19
24	Is that a factor that in your experience	11:31:21
25	can affect the final rate that emerges from a FRAND	11:31:27

## SAMSUNG CBI UNDER THE PROTECTIVE ORDER

Transcript of Jong-Pil Hong, Corporate Designee

Conducted on February 28, 2018

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1	need to see it.	03:08:25
2	A. Okay. You said there's a supplemental?	03:20:13
3	Q. It's almost entirely redacted, and I'm not	03:20:16
4	going to ask you any questions about it.	03:20:18
5	A. Okay.	03:20:21
6	Q. So we probably spent as much time on this	03:20:22
7	as we -- as we ought to.	03:20:25
8	A. I was going to just say, if you're going to	03:20:26
9	ask me questions, then I'll look at it; but if not,	03:20:28
10	that's fine.	03:20:31
11	Q. Great.	03:20:31
12	If we turn back to paragraph 17 in	03:20:31
13	Mr. Shim's declaration or witness statement, you see	03:20:34
14	there again that second sentence he lists a number	03:20:38
15	of factors that he says influence the amount of the	03:20:41
16	lump sum payment, you know, that was ultimately	03:20:47
17	negotiated between Samsung and counterparties.	03:20:50
18	And among those he lists are the history of	03:20:52
19	the parties' agreements, their business	03:20:54
20	relationships, the pendency of litigation. And then	03:20:57
21	he has a residual and more that bear on the ultimate	03:21:00
22	amount paid.	03:21:04
23	You see that?	03:21:08
24	A. Yes, I see that.	03:21:08
25	Q. And I think before we broke to review the	03:21:09

## SAMSUNG CBI UNDER THE PROTECTIVE ORDER

Transcript of Jong-Pil Hong, Corporate Designee

Conducted on February 28, 2018

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1	statement in its entirety that you'd agree that	03:21:13
2	those were factors that would influence the outcome	03:21:15
3	of a negotiation, including an outcome or a	03:21:18
4	negotiation focused on SEPs subject to a FRAND	03:21:22
5	commitment.	03:21:28
6	Am I right?	03:21:29
7	A. I do want to thank you for letting me take	03:21:29
8	time to review it, and I -- I'm more at ease in	03:21:33
9	answering after reviewing the document.	03:21:36
10	And yes, I generally would agree that these	03:21:37
11	are some of the factors. There may be others or	03:21:40
12	more, but yes.	03:21:42
13	Q. Sure.	03:21:43
14	Would it be fair to say that some of those	03:21:47
15	factors, for example, a party's business	03:21:48
16	relationship or whether there was litigation or	03:21:52
17	history of prior agreements, those might not be	03:21:53
18	apparent on the face of a given agreement, but they	03:21:56
19	can have an influence on the terms of that	03:22:00
20	agreement?	03:22:03
21	A. Yes, the license agreement, it would be	03:22:05
22	difficult sometimes to see that. Sometimes you see	03:22:10
23	in the agreement the dismissal of litigation of	03:22:13
24	pending cases, and you kind of see that that was a	03:22:21
25	factor.	03:22:23

## SAMSUNG CBI UNDER THE PROTECTIVE ORDER

Transcript of Jong-Pil Hong, Corporate Designee

Conducted on February 28, 2018

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1 Q. So would you agree with me that to properly 03:22:23  
2 interpret some agreements, you might need to look 03:22:26  
3 beyond the agreement to the surrounding 03:22:28  
4 circumstances? 03:22:30

5 A. I pause because there are many factors, and 03:22:31  
6 it may be helpful, it may not be helpful because 03:22:44  
7 there's so many factors. And the information that 03:22:47  
8 one party has and then the counterparty had are 03:22:50  
9 different. So it is very difficult to tell. And 03:22:54  
10 whether having more information, whether that is 03:22:58  
11 helpful or not, I'm not sure. 03:23:01

12 Q. Okay. You'd agree with me in some cases it 03:23:03  
13 might be? 03:23:06

14 A. Maybe. Maybe. 03:23:08

15 Q. Okay. 03:23:10

16 A. I pause because sometimes it gets more 03:23:11  
17 confusing. 03:23:15

18 Q. Okay. Well, let me give you an example. 03:23:15

19 If in connection with entering a license 03:23:19  
20 agreement the parties also develop some kind of 03:23:23  
21 friendly business relationship, would you need to 03:23:25  
22 account for the benefit that comes from that, you 03:23:33  
23 know, friendly business relationship when you assess 03:23:37  
24 the value that each side received in connection with 03:23:40  
25 the license agreement? 03:23:47

## SAMSUNG CBI UNDER THE PROTECTIVE ORDER

Transcript of Jong-Pil Hong, Corporate Designee

Conducted on February 28, 2018

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1	A. I would not deny that it is a factor, but I	03:23:49
2	just -- I don't know how you may be able to go about	03:23:56
3	that analysis.	03:24:01
4	Q. Okay. One of the things that Mr. Shim said	03:24:02
5	in the declaration was that Samsung didn't have a	03:24:09
6	uniform starting point for license negotiations,	03:24:12
7	that that was something that it determined on a	03:24:16
8	case-by-case basis.	03:24:18
9	Do you recall that?	03:24:21
10	A. Yes, and consistent with my personal	03:24:22
11	experience, we don't have cases where -- most of the	03:24:25
12	cases the parties are not seeking a license of	03:24:29
13	Samsung patents. In which case there's no reason to	03:24:32
14	provide any rates at the beginning or whatever stage	03:24:36
15	of the negotiation.	03:24:41
16	Q. In those circumstances where the	03:24:42
17	counterparty is seeking a license to Samsung's	03:24:44
18	patents, how does it go about determining what terms	03:24:46
19	to offer in the context of that negotiation?	03:24:52
20	A. I don't know.	03:24:59
21	Q. Okay. Does Samsung have a position that --	03:25:00
22	what sort of the final FRAND rate should be for its	03:25:11
23	portfolio of 3G or 4G SEPs?	03:25:14
24	MR. PEASE: Objection. Lacks foundation,	03:25:20
25	vague.	03:25:21

SAMSUNG CBI UNDER THE PROTECTIVE ORDER

Transcript of Jong-Pil Hong, Corporate Designee

Conducted on February 28, 2018

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1 REPORTER'S CERTIFICATE

2 I, Anne Torreano, Certified Shorthand  
3 Reporter licensed in the State of California,  
4 License No. 10520, hereby certify that the deponent  
5 was by me first duly sworn, and the foregoing  
6 testimony (Pages 1-233) was reported by me and was  
7 thereafter transcribed with computer-aided  
8 transcription; that the foregoing is a full,  
9 complete, and true record of said proceedings.

10 I further certify that I am not of counsel  
11 or attorney for either or any of the parties in the  
12 foregoing proceeding and caption named or in any way  
13 interested in the outcome of the cause in said  
14 caption.

15 Dated this 7th day of March, 2018.

16  
17 [ ] Reading and Signing was requested.

18 [ ] Reading and Signing was waived.

19 [X] Reading and Signing was not requested.

20  
21  
22   
23

24 ANNE M. TORREANO, CSR No. 10520  
25

**EXHIBIT 5**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

1 UNITED STATES DISTRICT COURT

2 NORTHERN DISTRICT OF CALIFORNIA

3 SAN FRANCISCO DIVISION

4 - - - - - X  
5 HUAWEI TECHNOLOGIES CO., LTD., :  
6 HUAWEI DEVICE USA, INC., and HUAWEI :  
7 TECHNOLOGIES USA, INC., :  
8 Plaintiffs/Counterclaim :  
9 Defendants, :  
10 v. : Case No.  
11 SAMSUNG ELECTRONICS CO., LTD., : 16-cv-02787-WHO  
12 SAMSUNG ELECTRONICS AMERICA INC., :  
13 Defendants/Counterclaim :  
14 Plaintiffs. :  
15 - - - - - X  
16  
17 HIGHLY CONFIDENTIAL - OUTSIDE COUNSEL'S' EYES ONLY  
18 Videotaped Deposition of Gregory Leonard  
19 Palo Alto, California  
20 Wednesday, June 20, 2018  
21 9:05 A.M.  
22  
23 Job No.: 193655  
24 Pages: 1 - 266  
25 Reported By: Michael P. Hensley, CSR No. 14114, RMR

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## Transcript of Gregory Leonard

Conducted on June 20, 2018

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1 GREGORY LEONARD,  
2 having been first duly sworn, was examined and testified  
3 as follows:

**EXAMINATION BY**

COUNSEL FOR THE PLAINTIFFS/COUNTERCLAIM DEFENDANTS

BY MR. GIARDINA:

Q. Good morning. 09:06:21

A. Good morning. 09:06:21

Q. Could you say and spell your name for the record 09:06:22

please? 09:06:25

A. Sure. Gregory Leonard, G-r-e-g-o-r-y 09:06:25

L-e-o-n-a-r-d. 09:06:30

Q. Dr. Leonard, I know you've been through this 09:06:30

drill many, many times. If I ask you a question today 09:06:36

that you don't understand, will you let me know? 09:06:38

A. Sure. 09:06:39

Q. If you need a break at any point, just let us 09:06:40

know. Okay? 09:06:43

A. Okay. 09:06:44

Q. You are an economist and a partner with 09:06:44

Edgeworth Economics? 09:06:49

A. That's correct. 09:06:49

Q. How would you describe Edgeworth's line of 09:06:50

business? 09:06:53

A. It's an economic consulting firm. 09:06:53

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Transcript of Gregory Leonard

Conducted on June 20, 2018

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1	Q. Those are the only depositions that you reviewed	10:44:25
2	in connection with rendering the opinions you offered in	10:44:28
3	your opening report?	10:44:32
4	A. Depositions? It looks to be -- well, it looks	10:44:39
5	to be what's on this list.	10:44:47
6	Q. Okay. So I'll represent to you that all three	10:44:48
7	of those individuals are employees of Huawei.	10:44:52
8	So I take it, in connection with rendering the	10:44:55
9	opinions that you've offered in this opening report, you	10:44:57
10	didn't consider the deposition testimony of any of	10:45:00
11	Samsung's witnesses?	10:45:03
12	A. Unless it was omitted from that, then that would	10:45:08
13	be correct.	10:45:12
14	Q. Okay. And if we look at Exhibit A to the	10:45:16
15	rebuttal report, Exhibit 152 -- I misspoke, it's	10:45:20
16	Exhibit B to your rebuttal report.	10:45:25
17	A. Mm-hmm.	10:45:27
18	Q. If we look at page 3 of that. Again, now you've	10:45:28
19	got a slightly expanded list of the depositions that you	10:45:32
20	considered in rendering the opinions that you offered in	10:45:36
21	your rebuttal report.	10:45:39
22	A. Yeah. I hate to tell you, but I think the	10:45:41
23	appendices or whatever they're called, are not included	10:45:46
24	in what you gave for Exhibit 152.	10:45:50
25	MS. MAROULIS: That is the case with my copy as	10:45:51

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Transcript of Gregory Leonard

Conducted on June 20, 2018

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1	Q.	Okay. And, now, just to close the loop on	11:03:09
2		something we were talking about prior to the break, if	11:03:13
3		you turn to page 3 of appendix B which lists -- lists	11:03:17
4		the materials you considered in connection with your	11:03:21
5		rebuttal report, you see it identifies the depositions	11:03:24
6		that you considered.	11:03:27
7	A.	Yes.	11:03:28
8	Q.	And it lists the same depositions that were	11:03:28
9		included in your opening report and adds the deposition	11:03:34
10		of Ms. NanFen Yu.	11:03:36
11		Do you see that?	11:03:40
12	A.	I do.	11:03:40
13	Q.	And I'll represent to you that Ms. Yu is also an	11:03:40
14		employee of Huawei.	11:03:45
15	A.	Okay.	11:03:45
16	Q.	So I take it from this list, you didn't consider	11:03:46
17		any of the fact testimony of any of the Samsung	11:03:49
18		witnesses in forming the opinions you expressed in your	11:03:52
19		rebuttal report?	11:03:55
20	A.	Not -- not their deposition testimony, no.	11:03:55
21	Q.	And you didn't have any conversations with any	11:03:57
22		of them, did you?	11:04:00
23	A.	I did not, no.	11:04:01
24	Q.	Okay. Now, earlier this morning you -- you --	11:04:02
25		and I'm paraphrasing a bit, but I take it you criticized	11:04:12

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Transcript of Gregory Leonard

Conducted on June 20, 2018

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1	Q.	Okay. Sorry about that.	15:13:56
2		(Exhibit 171 was marked for identification	15:13:56
3		and is attached to the transcript.)	15:13:56
4	Q.	Now, Dr. Leonard, I have handed you a document	15:15:11
5		that's been marked as Exhibit 171. It is a -- a	15:15:12
6		redacted version, as understand it, of the expert report	15:15:21
7		that you submitted on behalf of Samsung in the Unwired	15:15:24
8		Planet litigation.	15:15:29
9	A.	Okay.	15:15:30
10	Q.	Does that appear to be right?	15:15:30
11	A.	Seems to be.	15:15:32
12	Q.	Okay. It's your signature on the last page of	15:15:33
13		the exhibit at page 193?	15:15:35
14	A.	Oops. Yes.	15:15:43
15	Q.	If you turn to page 20 and paragraph 27?	15:15:48
16	A.	Okay.	15:15:55
17	Q.	Does that refresh your recollection that you	15:15:55
18		adopted a range of [REDACTED] percent as the aggregate	15:15:58
19		royalty burden to apply to the LTE 3G and the 2G	15:16:03
20		handsets?	15:16:07
21	A.	Yep. That's what I say here.	15:16:08
22	Q.	And the paragraph above that, you describe the	15:16:10
23		aggregate royalty rates implied by certain licenses	15:16:18
24		agreements that you had looked at in connection with	15:16:22
25		that --	15:16:25

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Transcript of Gregory Leonard

Conducted on June 20, 2018

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1	A. Mm-hmm.	15:16:25
2	Q. -- case; correct?	15:16:25
3	A. Yes.	15:16:27
4	Q. And you -- you calculated that the implied one	15:16:27
5	way -- or that the implied aggregate rate from the rate	15:16:32
6	you derived from [REDACTED] license agreement with	15:16:36
7	Samsung was [REDACTED]; correct?	15:16:40
8	A. Yes.	15:16:42
9	Q. Okay. And you deemed that to be consistent with	15:16:42
10	[REDACTED] own earlier statements that the aggregate	15:16:47
11	rate should be between [REDACTED] percent?	15:16:51
12	A. Yeah, roughly speaking.	15:16:53
13	Q. And you further state that Samsung's other	15:16:55
14	comparable licenses, being [REDACTED] and [REDACTED] all	15:16:58
15	imply single-digit aggregate royalty burdens; correct?	15:17:03
16	A. That's what it says here, yes.	15:17:10
17	Q. And that's were agreements that you had analyzed	15:17:11
18	as comparables in connection with this dispute over the	15:17:13
19	valuation of [REDACTED] SEPs; correct?	15:17:19
20	A. I mean, they were licenses that had been	15:17:25
21	produced in the case; so I believe they were -- that I	15:17:27
22	had analyzed them, yes.	15:17:30
23	Q. Okay. And you described them as Samsung's other	15:17:31
24	comparable licenses?	15:17:36
25	MS. MAROULIS: Objection. Form.	15:17:40

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Transcript of Gregory Leonard

Conducted on June 20, 2018

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1	A. Yeah. So I say other comparable licenses. But,	15:17:47
2	you know, might have to -- we'd have to dig into this	15:17:50
3	further.	15:17:54
4	See sometimes, unfortunately, we say comparable	15:17:55
5	licenses and then what we really mean is potentially	15:17:57
6	comparable. But anyway, it may well be.	15:18:00
7	Q. If you turn with me now to page 24 and	15:18:06
8	paragraph 35?	15:18:09
9	A. Okay.	15:18:13
10	Q. Here, you talk about the most comparable	15:18:13
11	licenses for the purpose of analyzing the dispute	15:18:17
12	concerning the FRAND royalty for [REDACTED]	15:18:23
13	portfolio; correct?	15:18:28
14	A. Yes.	15:18:28
15	Q. And you say "Based on my review, I find the most	15:18:28
16	comparable licenses for determining a FRAND royalty are	15:18:31
17	the following." The first one that you list is the [REDACTED]	15:18:34
18	[REDACTED] agreement; correct?	15:18:37
19	A. Yes.	15:18:40
20	Q. Okay. So you deemed that to be among the most	15:18:41
21	comparable licenses for determining the FRAND royalty	15:18:45
22	for the [REDACTED] SEPs?	15:18:47
23	A. It was one of the ones I thought was the most	15:18:50
24	comparable, yes.	15:18:53
25	Q. Yeah. If we look towards the bottom of that	15:18:54

HIGHLY CONFIDENTIAL - OUTSIDE COUNSEL'S EYES ONLY

Transcript of Gregory Leonard

Conducted on June 20, 2018

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1	page on page 24, you say "Based on my review the	15:18:59
2	evidence and contemporaneous data from financial	15:19:03
3	analysts, I determine [REDACTED] one-way rate under the	15:19:06
4	license to be [REDACTED]"; correct?	15:19:09
5	A. That's right.	15:19:13
6	Q. Okay. The next license that you describe as	15:19:13
7	being among the most comparable is the Ericsson-Huawei	15:19:21
8	license?	15:19:24
9	A. Yes.	15:19:24
10	Q. And therefore, non-infrastructure equipment	15:19:25
11	products, you state that "Huawei agreed to pay running	15:19:33
12	[REDACTED]	15:19:37
13	for 4G devices"?	15:19:43
14	A. Right.	15:19:46
15	Q. And you're aware that the Ericsson-Huawei	15:19:46
16	license agreement also includes balancing payment that	15:19:51
17	is made by Huawei to Ericsson with respect to their	15:19:54
18	sales of infrastructure equipment?	15:19:57
19	A. As I'm sitting here, I don't. But this does say	15:20:01
20	that those rates are for non-infrastructure equipment.	15:20:04
21	Q. Okay. Have you analyzed the one-way rates that	15:20:08
22	underlie the balancing payments that are made by Huawei	15:20:14
23	to Ericsson under the 2016 agreement relating to	15:20:18
24	infrastructure?	15:20:21
25	A. I don't recall as I'm sitting here.	15:20:24

HIGHLY CONFIDENTIAL - OUTSIDE COUNSEL'S EYES ONLY

Transcript of Gregory Leonard

Conducted on June 20, 2018

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1	Q. Okay. Have you looked -- I take it you have	15:20:26
2	looked at the Ericsson-Huawei arbitration award because	15:20:30
3	you referenced it earlier today a couple of times.	15:20:33
4	A. Yeah. I think I have seen that, yes.	15:20:36
5	Q. Okay. And you can tell from that award that the	15:20:38
6	one-way rate that Huawei receives from Ericsson, with	15:20:43
7	[REDACTED]	15:20:47
8	correct?	15:20:55
9	A. I don't recall sitting here, but I can look at	15:20:55
10	it.	15:20:57
11	Q. Okay. Is it consistent with your recollection	15:20:58
12	that the arbitrators and the Ericsson-Huawei arbitration	15:21:00
13	concluded that the rates for infrastructure and the	15:21:04
14	rates for handsets should be the same?	15:21:07
15	A. I mean, again, I'd have to look at it to verify	15:21:10
16	that, but it's, obviously, there somewhere.	15:21:13
17	Q. Yeah. That's consistent with your recollection	15:21:16
18	of what Judge Birss did in connection with Unwired	15:21:18
19	Planet. That is, he applied the same rate for handsets	15:21:23
20	and infrastructure?	15:21:25
21	A. Without -- I would want to check that. I don't	15:21:28
22	recall as I'm sitting here.	15:21:33
23	Q. The next license agreement that you regarded as	15:21:35
24	most comparable for the purpose of determining a FRAND	15:21:37
25	royalty for [REDACTED] SEP's was the [REDACTED]	15:21:39

HIGHLY CONFIDENTIAL - OUTSIDE COUNSEL'S EYES ONLY

Transcript of Gregory Leonard

Conducted on June 20, 2018

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1	[REDACTED] license; correct?	15:21:43
2	A. Yes.	15:21:46
3	Q. And for that license, you conclude that "It	15:21:47
4	yields a one-way royalty rate for [REDACTED] of	15:21:50
5	[REDACTED]; correct?	15:21:55
6	A. That's right.	15:21:57
7	Q. Okay. And then the -- the last agreement that	15:21:58
8	you deemed to be most comparable for purposes of	15:22:06
9	analyzing the value of [REDACTED] SEPs was the	15:22:08
10	[REDACTED] license; correct?	15:22:13
11	A. Yeah. I mean, there's one that's redacted here,	15:22:15
12	but it's -- the last one is that one, yes.	15:22:19
13	Q. Got it. And for that one, you calculated, at	15:22:21
14	the time, a one-way rate of [REDACTED]. That was to	15:22:25
15	[REDACTED] for its SEPs.	15:22:30
16	A. Yes.	15:22:38
17	Q. Okay.	15:22:39
18	(Exhibit 172 was marked for identification	15:22:58
19	and is attached to the transcript.)	15:23:20
20	Q. Dr. Leonard, I've handed you a document that's	15:23:20
21	been marked as --	15:23:24
22	MR. GIARDINA: I think I have screwed up. Could	15:23:26
23	I have it back? I'm going to put a different exhibit	15:23:29
24	number on it.	15:23:32
25	THE WITNESS: Sure.	15:23:33

HIGHLY CONFIDENTIAL - OUTSIDE COUNSEL'S EYES ONLY

Transcript of Gregory Leonard

Conducted on June 20, 2018

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1 ACKNOWLEDGMENT OF DEPONENT

2 I, GREGORY LEONARD, do hereby acknowledge that I  
3 have read and examined the foregoing testimony and the  
4 same is a true, correct and complete transcription of  
5 the testimony given by me and any corrections appear on  
6 the attached errata sheet signed by me.

7

8

9 (SIGNATURE)

(DATE)

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**EXHIBIT 6**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION

HUAWEI TECHNOLOGIES CO., LTD., )  
HUAWEI DEVICE USA, INC., and )  
HUAWEI TECHNOLOGIES USA, INC., )  
                                      )  
Plaintiffs/ )  
Counterclaim-Defendants, )  
                                      )  
v. ) Case No.  
                                      ) 16-cv-02787-WHO  
                                      )  
SAMSUNG ELECTRONICS CO., LTD., )  
SAMSUNG ELECTRONICS AMERICA, )  
INC., )  
                                      )  
Defendants/ )  
Counterclaim-Plaintiffs, )  
                                      )  
and )  
                                      )  
SAMSUNG RESEARCH AMERICA, )  
                                      )  
Defendant, )  
                                      )  
v. )  
                                      )  
HISILICON TECHNOLOGIES CO., LTD., )  
                                      )  
Counter-claim Defendant. )  
                                      )

\*\*HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY\*\*

## DEPOSITION OF JEAN-SÉBASTIEN BORGHETTI

Brussels, Belgium,

Thursday, June 28, 2018

Reported by:  
MISS LEAH M. WILLERSDORF,  
(AVR, MBIVR, QRR2, International  
Participating Member NCRA)  
Job No. 194648

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## Transcript of Jean-Sebastien Borghetti

Conducted on June 28, 2018

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1	JEAN-SÉBASTIEN BORGHETTI,	09:41:41
2	having been sworn,	09:41:57
3	was examined and testified as follows:	09:41:57
4	EXAMINATION ON BEHALF OF HUAWEI:	09:41:58
5	BY MR. PETERSON:	09:41:58
6	Q. Good morning, Professor Borghetti.	09:41:59
7	A. Good morning.	09:42:00
8	Q. My name is Leif Peterson, and I'm	09:42:01
9	representing Huawei, and I'm here to ask you some	09:42:03
10	questions about your work on this case today. Okay?	09:42:05
11	Would you please state your name.	09:42:11
12	A. My name is Jean-Sébastien Borghetti.	09:42:12
13	Q. And how many times have you been deposed,	09:42:16
14	Professor Borghetti?	09:42:19
15	A. This is the second time.	09:42:19
16	Q. And what was the first time?	09:42:20
17	A. Approximately four years ago.	09:42:23
18	Q. What was that in connection with?	09:42:27
19	A. Another ETSI case.	09:42:30
20	Q. Okay. And who were you retained by in	09:42:34
21	that case?	09:42:36
22	A. Samsung.	09:42:37
23	Q. Is that the -- we'll look at your list of	09:42:39
24	prior work in a little bit. But was that around 2014?	09:42:44
25	A. Yeah, it must have been either at the very	09:42:49

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Transcript of Jean-Sebastien Borghetti

Conducted on June 28, 2018

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1	of the three options is chosen, French law is clear	10:35:20
2	that the ETSI declaration gives rise to an obligation	10:35:23
3	to negotiate in good faith with standards	10:35:27
4	implementers, right?	10:35:31
5	A. Yes.	10:35:31
6	Q. So, in your opinion, does the scope of	10:35:31
7	the obligation of the patent-holder change at all,	10:35:35
8	depending on which of those three legal mechanisms	10:35:38
9	best describes the ETSI declaration?	10:35:42
10	A. No, it doesn't.	10:35:44
11	Q. Okay. So they all lead to the same place,	10:35:46
12	basically?	10:35:49
13	A. Yes.	10:35:49
14	MR. PETERSON: It's been about an hour.	10:36:07
15	If you want to take a short break, I can mark some	10:36:08
16	additional documents.	10:36:12
17	MS. MAROULIS: Sure.	10:36:12
18	THE VIDEOGRAPHER: Okay. We are going off	10:36:13
19	the video record. The time is 10:35. This is the end	10:36:15
20	of file 1.	10:36:18
21	(Off the record.)	10:36:20
22	(Exhibit 926 marked for identification.)	10:42:30
23	(Exhibit 927 marked for identification.)	10:42:36
24	THE VIDEOGRAPHER: We're back on the	10:43:59
25	record. The time is 10:43. This is the beginning of	10:44:02

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## Transcript of Jean-Sebastien Borghetti

Conducted on June 28, 2018

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1	file 2.	10:44:07
2	BY MR. PETERSON:	10:44:08
3	Q. Welcome back, Professor Borghetti. You've	10:44:09
4	been handed two documents which are marked as	10:44:12
5	Exhibits 926 and 927. I'd like to look at 926 first.	10:44:15
6	Do you recognize this as a copy of the ETSI	10:44:22
7	IPR Policy?	10:44:31
8	A. Yes. I see that the date is 29 November	10:44:31
9	2017. And I'm not quite sure I used so recent a	10:44:34
10	version.	10:44:44
11	Q. To your knowledge, have the provisions of	10:44:46
12	Article 6, which deals with the availability of	10:44:51
13	licenses, changed at all in a way that would alter	10:44:53
14	your opinions since -- between the version you used	10:44:59
15	and this version?	10:45:04
16	A. I don't think so, no.	10:45:10
17	Q. In section 3, Article 3 of Exhibit 926,	10:45:16
18	ETSI puts forth the policy objectives for the IPR	10:45:22
19	policy, right?	10:45:25
20	A. Yes.	10:45:26
21	Q. And in section 3.2, it says that:	10:45:28
22	"IPR holders, whether members of ETSI and their	10:45:33
23	affiliates or third parties, should be adequately and	10:45:36
24	fairly rewarded for their use of IPRs in the	10:45:39
25	implementation of standards and technical	10:45:42

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## Transcript of Jean-Sebastien Borghetti

Conducted on June 28, 2018

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1	specifications."	10:45:44
2	Right?	10:45:45
3	A. Yes.	10:45:45
4	Q. And so you'd agree that the IPR policy	10:45:46
5	should be interpreted with that policy objective in	10:45:49
6	mind, right?	10:45:53
7	MS. MAROULIS: Objection; form.	10:45:54
8	THE WITNESS: Yes.	10:46:03
9	BY MR. PETERSON:	10:46:03
10	Q. If you'll turn with me to Article 12,	10:46:04
11	which appears on page 42 at the top, the heading is	10:46:06
12	"Law and Regulation." And it states:	10:46:18
13	"The Policy shall be governed by the laws of	10:46:22
14	France."	10:46:25
15	Right?	10:46:26
16	A. Yes.	10:46:27
17	Q. And that's why you're here, because you're	10:46:27
18	interpreting the ETSI IPR Policy in accordance with	10:46:30
19	the contract laws of France, right?	10:46:36
20	A. Yes.	10:46:37
21	Q. And then it said:	10:46:38
22	"However, no Member shall be obliged by the	10:46:40
23	Policy to commit a breach of the laws or regulations	10:46:40
24	of its country or to act against supranational laws or	10:46:40
25	regulations applicable to its country insofar as	10:46:40

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Transcript of Jean-Sebastien Borghetti

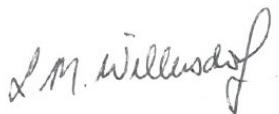
Conducted on June 28, 2018

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1 REPORTER CERTIFICATE  
2  
3

4 I, LEAH WILLERSDORF, the officer before whom the  
5 foregoing deposition was taken, do hereby certify that  
6 the foregoing transcript is a true and correct record  
7 of the testimony given; that said testimony was taken  
8 by me stenographically and thereafter reduced to  
9 typewriting under my direction; that reading and  
10 signing was requested; and that I am neither counsel  
11 for, related to, nor employed by any of the parties to  
12 this case and have no interest, financial or  
13 otherwise, in its outcome.

14  
15 IN WITNESS WHEREOF, I have hereunto set my hand  
16 this 3rd day of July 2018.

17  
18   
19

20 LEAH M. WILLERSDORF  
21 Accredited Verbatim Reporter,  
22 Member of the British Institute  
of Verbatim Reporters,  
23 Qualified Realtime Reporter,  
International Participating  
24 Member NCRA.  
25

**EXHIBIT 8**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION**

HUAWEI TECHNOLOGIES, CO., LTD. et al., )  
v. Plaintiffs, )  
SAMSUNG ELECTRONICS CO. LTD., et al., )  
Defendants. )  
SAMSUNG ELECTRONICS CO., LTD, & )  
SAMSUNG ELECTRONICS AMERICA, INC. )  
Counterclaim-Plaintiffs, )  
v. )  
HUAWEI TECHNOLOGIES, CO., LTD, )  
HUAWEI DEVICE USA, INC., HUAWEI )  
TECHNOLOGIES USA, INC., & HISILICON )  
TECHNOLOGIES CO., LTD., )  
Counterclaim-Defendants. )

**REBUTTAL EXPERT REPORT OF JERRY A. HAUSMAN**  
**May 25, 2018**

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my opening report, government agencies have explained their concerns with the realities of economic issues arising from hold up.<sup>16</sup>

6. Dr. Padilla states: “Huawei’s conduct cannot be characterised as a refusal to license or as an attempt to obtain supra FRAND royalties.”<sup>17</sup> I disagree. Huawei’s license offers to Samsung were significantly higher than its [REDACTED]  
[REDACTED]<sup>18</sup> In my view, Huawei was attempting to obtain supra FRAND royalties from Samsung for the use of the Huawei SEP patents. Contrary to Dr. Padilla’s claim, I find that Huawei has violated the non-discrimination standard in FRAND.

7. Economics has a well-defined meaning for the term “non-discriminatory.” Price discrimination occurs when prices differ for customers even though their (marginal) costs are similar.<sup>19</sup> More broadly, non-discrimination occurs when similarly

<sup>16</sup> Hausman Report, ¶¶15-16. Also see Address by FTC Chairwoman Edith Ramirez, “Standard-Essential Patents and Licensing: An Antitrust Enforcement Perspective,” 8<sup>th</sup> Annual Global Antitrust Enforcement Symposium, September 10, 2014, p. 7; “Intellectual Property and Standard Setting,” U.S. submission to the 122<sup>nd</sup> meeting of the OECD Competition Committee, December 2014, p. 6.

<sup>17</sup> Padilla Report, ¶2.14.

<sup>18</sup> In recent years Apple and Samsung have consistently been the two leading cell phone manufacturers, both in the U.S. and worldwide. See HW\_Samsung\_00264450 (Strategy Analytics North America Handset Vendor Marketshare Q4 2016) and HW\_Samsung\_00264453 (Strategy Analytics Global Handset Revenue ASP and Profit Q4 2016). Dr. Padilla acknowledges that Apple “is now one of the top two handset manufacturers in the industry” (¶3.11b).

<sup>19</sup> For example, a leading economics textbook states: “Hence, we will say that there is no price discrimination if differences in prices between consumers exactly reflect differences in the costs of serving these consumers” (J. Tirole, *The Theory of Industrial Organization*, 1988, pp. 133-134). This definition of discrimination is used throughout economics. I have previously written academic papers on price discrimination (e.g., J. Hausman and J. Mackie-Mason, “Price Discrimination and Patent Policy,” *Rand Journal of Economics* 19, 1988, pp. 253-265)

situated companies or individuals are treated similarly. Dr. Padilla appears to agree with this definition of non-discrimination based on the discussion in his report.<sup>20</sup> In contrast, discrimination occurs when similarly situated companies or individuals are charged significantly different prices or are treated in a significantly different manner. Huawei's offer is discriminatory because it attempts to charge higher royalties to Samsung than to [REDACTED], a similarly situated company, based on the Huawei 2014 agreement with [REDACTED].<sup>21</sup> Alternatively, if the 2014 [REDACTED] agreement were also to encompass non-SEP patents, as Mr. Lasinski claims, Huawei's offers would arguably be discriminatory because Huawei failed to offer Samsung terms for a SEP license that provided the same or similar value to the [REDACTED] agreement.

8. The discriminatory nature of Huawei's offer is demonstrated by the calculations of Huawei's expert Mr. Lasinski. As Mr. Lasinski acknowledges, the Huawei-[REDACTED] cross-license agreement only includes the parties' respective 2G, 3G, and 4G SEP portfolios.<sup>22</sup> Mr. Lasinski calculates that the effective one-way royalty rate paid by [REDACTED] (which applies only to 4G products) according to the terms of the license is [REDACTED]. However, Mr. Lasinski also calculates that the effective one-way 4G royalty

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<sup>20</sup> "Non-discriminatory terms indicate that the licensor must give comparable treatment to 'similarly situated' licensees so as to not distort competition between them." (Padilla Report, ¶2.6b).

<sup>21</sup> This definition of non-discrimination in the context of FRAND is also used by D. Carlton and A. Shampine, "An Economic Interpretation of FRAND," *Journal of Competition Law and Economics* 9, 2013, pp. 531-552. The authors explain how this approach will decrease the use of strategic behavior by patent holders to exercise increased market power.

<sup>22</sup> Lasinski Report, ¶135; Cheng Ex. 730 (HW\_Samsung\_00257642-667).

<sup>23</sup> Lasinski Report, ¶143, n.342, Schedule 11.3.

it does not, then that would be another factor indicating discrimination by Huawei because Samsung told Huawei at an early point in the negotiations that it preferred an agreement that covered both SEPs and non-SEPs, but Huawei refused without providing any explanation for its refusal and without offering Samsung terms that were comparable to those obtained by [REDACTED].<sup>33</sup>

10. From an economist's point of view, this bargaining strategy that Huawei employed is discriminatory. [REDACTED]

[REDACTED] Both companies must license Huawei's SEPs to practice the various cell phone standards. Furthermore, both companies must license the non-SEPs if they are valid and infringed. If Mr. Lasinski is correct that the 2014 Huawei-[REDACTED] SEP-only license implicitly includes rights to non-SEPs, and he is not, Huawei's refusal to include rights to non-SEPs in its SEP-only license proposals to Samsung is arguably discriminatory because it treats the two similar companies in a significantly different manner and is discriminatory with respect to the consideration it demanded from Samsung.<sup>34</sup> Samsung was clear in its discussions with Huawei that it wanted "patent peace" similar to what Mr. Lasinski claims Huawei wanted

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<sup>33</sup> Dr. Padilla recognizes that Samsung attempted to obtain licenses to both Huawei's SEPs and non-SEPs (Padilla Report, ¶6.5).

<sup>34</sup> In this regard, Prof. Carlton and Dr. Shampine op. cit. conclude: "Under FRAND, the menu of offered terms and conditions should be the same for similarly situated firms." (p. 546, fn. 43). R. Gilbert, "Deal or No Deal? Licensing Negotiations in Standard-Setting Organizations," *Antitrust Law Journal* 77, 2011, pp. 855-888 also comes to a similar conclusion. Prof. Gilbert states: "Non-discrimination does not require that every licensee pays the same royalty, but rather that every licensee can choose from the same royalty schedule" (p. 873, see also p. 875).

and obtained from its agreement with [REDACTED]. Huawei refused to negotiate a license with Samsung that had the feature of “patent peace.” Thus, in my view Huawei treated Samsung differently than its agreement with [REDACTED] (even according to Mr. Lasinski’s interpretation of the [REDACTED] agreement), and so Huawei discriminated against Samsung in violation of its FRAND licensing commitment.<sup>35</sup>

11. Dr. Padilla claims that Samsung’s request for a license to both SEPs and non-SEPs is a refusal to negotiate a FRAND license because Huawei has only offered a SEP-based license.<sup>36</sup> Moreover, my view as discussed above is that if Huawei were to have combined rights to non-SEPs along with SEPs in its 2014 license with [REDACTED] (at least according to Mr. Lasinski), under the non-discrimination provision of its FRAND commitment Huawei is required to offer Samsung terms reflecting similar economic value, which it failed to do. Since [REDACTED] and Samsung are similarly situated, if Mr. Lasinski is correct in his interpretation of the Huawei [REDACTED] SEP-only license, I conclude that Huawei has attempted to discriminate against Samsung. Thus, its SEP-only offer to Samsung is not FRAND in relation to its license with [REDACTED].

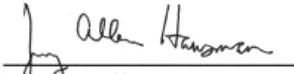
12. Dr. Padilla’s claim that “[a]s a matter of economics, as between manufacturing companies, the potential harm from hold-out can be just as competitively

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<sup>35</sup> My interpretation of Huawei’s duty under the non-discriminatory obligation of FRAND appears to be similar to Dr. Padilla’s, who states: “The non-discrimination prong of the FRAND commitment … is generally interpreted to mean that the patent holder has to give comparable treatment to similarly situated licensees in negotiations so that such licensees are not discriminated against relative to one another.” Padilla Report ¶ 3.31. Huawei refused to give “comparable treatment” to Samsung in terms of a combined SEP and non-SEP license, which is the type of license it signed with [REDACTED] according to Mr. Lasinski.

<sup>36</sup> Padilla Report, ¶6.5.

entire royalty stack cannot be challenged in a single proceeding since many different SEP holders are involved. Many of the patents may be valid and infringed, but the aggregate royalty rate may still be “too high.” I do not find Dr. Padilla’s proposed solution to be realistic from an economic point of view.

  
\_\_\_\_\_  
Jerry Allen Hausman  
May 25, 2018

**EXHIBIT 9**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

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Page 1

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION

4 HUAWEI TECHNOLOGIES CO. LTD.,  
HUAWEI DEVICE USA, INC.,  
5 AND HUAWEI TECHNOLOGIES USA, INC.

## Plaintiffs/Counterclaim-Defendants,

vs. Case No.: 16-cv-02787-WHO

SAMSUNG ELECTRONICS CO., LTD.,  
SAMSUNG ELECTRONICS AMERICA, INC.

Defendants/Counterclaim-Plaintiffs.

AND

SAMSUNG RESEARCH AMERICA, INC.

Defendant

vs.

HISILICON TECHNOLOGIES CO., LTD.,

Counterclaim-Defendant.

HIGHLY CONFIDENTIAL, OF SIGHT COUNSEL ONLY

UNDER THE PROTECTIVE ORDER

VIDEOTAPED DEPOSITION OF JORGE PADILLA

June 28, 2018

Job No. 143459

Highly Confidential, Of Sight Counsel Only Under the Protective Order

Page 6

1 Videographer: This is the start of media unit labelled  
2 number one of the video recorded deposition of Jorge  
3 Padilla, in the matter of Huawei Technologies Co limited  
4 and Huawei Device USA Inc and Huawei Technologies USA  
5 Inc, versus Samsung Electronics Company Limited and  
6 Samsung Inc America. It's being heard in the US Court  
7 Northern District of California, San Francisco and the  
8 case number is 16-cv-02787-WHO.

9 This deposition is being held in the offices of  
10 Quinn Emmanuel in Brussels, Belgium, on June 28th, 2018  
11 on 9.29 on the monitor.

12 I am Chris Warmoll, from TSG Reporting, 747 Third  
13 Avenue, 10th Floor, New York, NY 10017. The Court  
14 Reporter is Karen Crehan in association with TSG  
15 Reporting. Would counsel please introduce yourselves.

16 Mr Pease: Thomas Pease from Quinn Emmanuel and with me is  
17 Paul Zeineddin.

18 Mr Giardina: I am from Sidley Austin on behalf of Huawei  
19 and Justin Coombs from Compass Lexicon.

20 Videographer: Will the Court Reporter please swear in the  
21 witness.

22 THE WITNESS DR JORGE PADILLA WAS SWORN AND EXAMINED BY MR  
23 PEASE AS FOLLOWS:

24 Videographer: Thank you, we may begin.

25 Q. Morning Dr Padilla, would you mind stating your full

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1           licensor, correct?

2   A. Correct.

3   Q. And those are legal terms that courts have used on  
4       assessing FRAND conduct, is that right?

5   A. That's correct to the best of my understanding.

6   Q. Are you aware of any aspect of economics that involves  
7       analysing whether it licensee or licensor is willing or  
8       unwilling?

9   A. I don't think there is a paper in economics that is  
10      titled "willing licensees" or "willing licensors", but  
11      there is a very extensive literature on bargaining and  
12      their concepts in bargaining theory that are similar to  
13      the matter of willing licensor or unwilling licensee --  
14      or licensor. We have notions such as take it or leave  
15      it offers. We have models that tell us when parties are  
16      engaged in negotiation. We have models of refusals to  
17      negotiate. So there is literature in economics that  
18      helps you understand under which conditions one party  
19      would be willing and which party could be characterized  
20      as unwilling.

21   Q. And did you rely on that literature, that type of  
22      analysis in formulating any of the opinions you are  
23      offering in this case?

24   A. So I set out very clear clearly in my first report, I  
25      think, the three criteria that I would use that I think

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1       are compatible with economic theory and understanding  
2       for how to discriminate between a willing licensor and a  
3       willing licensee, and I think they are set out at the  
4       beginning of the section in which I review the  
5       negotiations between Huawei and Samsung.

6     Q. Do you have any background in electrical engineering or  
7       electronics engineering?

8     A. No.

9     Q. And I take it you are not familiar with the technical  
10      aspects of the 3G or 4G technology that's at issue here?

11    A. No, I participated in the cases concerning this industry  
12      since 2005 and I have been involved in numerous cases  
13      but I am not an electrical engineer, so my knowledge is  
14      that of somebody that reads about these things and tries  
15      to understand what engineers say.

16    Q. Could you look - did you look at any of the Samsung or  
17      Huawei patents that are at issue in this case?

18    A. No.

19    Q. I am going to take a step back. In this case, you  
20      understand that Samsung and Huawei have both asserted  
21      declared essential patents against each other?

22    A. Correct.

23    Q. And they are both contending that the other party  
24      infringes those patents, do you understand that?

25    A. I understand that.

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1 contributions was to discuss whether they could be used  
2 as a proxy for value among other potential proxies for  
3 value.

4 Q. And can SEP contributions be used as a proxy for value  
5 of a patent portfolio?

6 A. I think as a profession, as economists, we are  
7 struggling to understand or to develop good proxies for  
8 value. We have over the years developed some measures,  
9 forward citations with -- this case is one of them.  
10 There is some unsatisfaction about the usefulness of  
11 forward citations or patent counting and so we are all  
12 looking for different ways in which we could proximate  
13 the value. Contributions is one of the notions that has  
14 been put forward, and, you know, it has has its pros and  
15 its cons and its problems as well.

16 And people are trying to come with new ideas as to  
17 how to proxy value, because it's a difficult exercise,  
18 and so, you know, I think that my view on contributions  
19 is set out in my report, is just one additional proxy  
20 that you may want to consider. And my view at this  
21 stage is that since there is no perfect proxy, all of  
22 these are useful and potentially informative, but all of  
23 them should be taken with a pinch of salt.

24 Q. Just generally what are the pros and cons of  
25 contributions analysis, just generally?

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1       802.11 Wi-Fi standards?

2   A. That's correct. Yeah, I believe that that's correct.

3   Q. And Huawei has Standard Essential Patents for 80.211,  
4       correct?

5   A. I believe so.

6   Q. And so under the previous license offers from Huawei,  
7       Samsung would have gotten rights to those Wi-Fi related  
8       essential patents, correct?

9   A. Given what we saw, yes, yes, I think so.

10   Q. But that would not be the case for this agreement that  
11       Huawei provided in April 2013?

12   A. No, I have, as I have mentioned this is only LTE.

13   Q. Do you know whether Huawei ever told Samsung why it had  
14       changed from all standards to just 4G LTE standards?

15   A. No, I am not privy to those conversations, in the case  
16       that they happen.

17   Q. And so you have no way of saying whether or not Samsung  
18       was confused by this change of position on Huawei's  
19       part?

20   A. I cannot read Samsung's mind, no.

21   Q. You would agree that Wi-Fi SEPs have value, correct?

22   A. They have some value, of course.

23   Q. I am going to hand you what's been marked as Padilla  
24       Exhibit 8, a document previously marked as Cheng Exhibit  
25       723.

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1 another, no licensee is going to be absolutely identical  
2 to another. Secondly, because opining the contrary  
3 creates problems if you accept that FRAND is not a  
4 number but a range.

5 Q. And so before, in the example we talked about, I  
6 proposed that suppose Apple pays one cent and Samsung  
7 pays \$10 -- let's suppose Apple pays one cent and  
8 Samsung pays \$30; in your view if Samsung can continue  
9 to compete, even with that additional \$30 cost, it's not  
10 the subject of non-discrimination for FRAND purposes?

11 A. That's correct, and that is my view. But I think it's  
12 consistent with the view of many others. I think that I  
13 am not alone here, including the seminal paper in this  
14 area by Dan Swanson, and Bill Baumol, Anti-Trust Law  
15 Journal, 2005. They have exactly the same opinion as  
16 far as I recall.

17 Q. Now when Huawei first publicized its 1.5% so-called  
18 standard rate, it characterizes just that, a standard  
19 rate that would apply to everyone, correct?

20 Mr Gardinia: Objection to form and foundation.

21 A. I don't recall how it was characterized, I think that  
22 people that were publicizing rates for LTE, typically  
23 meant caps, maximum rates at the time, but I don't know  
24 exactly how Huawei presented it.

25 Q. But you are not aware of Huawei saying "well, we will

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Page 249

1  
2  
3 CERTIFICATE OF COURT REPORTER  
4

5 I, Karen Crehan, an Accredited Court Reporter,  
6 hereby certify that the testimony of the witness, Dr  
7 Jorge Padilla, in the foregoing transcript taken on 28th  
8 June, 2018, as recorded by me in machine shorthand was  
9 thereafter transcribed by me; and that the foregoing  
10 transcript is a true and accurate verbatim record of the  
11 said testimony.

12  
13 I further certify that I am not a relative,  
14 employee, counsel or financially involved with any of  
15 the parties to the within cause, nor am I in any way  
16 interested in the outcome of the within cause.  
17

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18 Karen Crehan  
19 Dated: July 3, 2018  
20  
21  
22  
23  
24  
25

**EXHIBIT 10**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION**

HUAWEI TECHNOLOGIES, CO., LTD. et al., }  
Plaintiffs, }  
v. } Case No. 16-cv-02787-WHO  
SAMSUNG ELECTRONICS CO. LTD., et al., }  
Defendants. }  
\_\_\_\_\_  
SAMSUNG ELECTRONICS CO., LTD, & }  
SAMSUNG ELECTRONICS AMERICA, INC. }  
Counterclaim-Plaintiffs, }  
v. }  
HUAWEI TECHNOLOGIES, CO., LTD, }  
HUAWEI DEVICE USA, INC., HUAWEI }  
TECHNOLOGIES USA, INC., & HISILICON }  
TECHNOLOGIES CO., LTD., }  
Counterclaim-Defendants. }  
\_\_\_\_\_

**EXPERT REPORT OF JERRY A. HAUSMAN**  
**April 27, 2018**

**\*\*\*\*\*HIGHLY CONFIDENTIAL – ATTORNEYS' EYES ONLY\*\*\*\*\***

assurance that F/RAND-encumbered patents included in the standard would be available on reasonable licensing terms under the SDO's policy.<sup>4</sup>

17. Huawei also recognizes that the threat of an injunction leads to increased royalty rates. In its arbitration against InterDigital, Huawei stated that “[h]old-up generally refers to a threat to deny access to the standard to an implementer, by using, for example, an actual or threatened injunction, in order to extract a royalty in excess of what otherwise would be fair and reasonable if the relevant IPR had not been included in the standard.”<sup>5</sup> Huawei also argued that certain licenses InterDigital relied upon were not reliable indicators of a reasonable royalty because “the terms of some of those prior licenses were coerced by threats of an injunction to stop implementation of a standard, a threat that InterDigital itself admits in internal documents allows it to recover [REDACTED] more in royalties.”<sup>6</sup> In addition, Mr. Cheng of Huawei believes that Huawei paid more to settle its case against SLC than it would have in a true bilateral negotiation because there was an injunction over its head.<sup>7</sup>

18. In 2016 Huawei filed patent infringement lawsuits against Samsung in China regarding 8 SEPs in which Huawei sought to obtain an injunction instead of monetary damages.<sup>8</sup> Huawei had previously committed to license each of the 8 SEPs on FRAND terms and conditions.<sup>9</sup> In attempting to obtain an injunction Huawei changed the threat

<sup>4</sup> U.S. Department of Justice and U.S. Patent & Trademark Office Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments, January 8, 2013, p. 6.

<sup>5</sup> HW\_Samsung\_00694743-865, p. 756.

<sup>6</sup> HW\_Samsung\_00694743-865, p. 758.

<sup>7</sup> Cheng Dep., pp. 106:24-107:5.

<sup>8</sup> Ding Dep., 206:4-9.

<sup>9</sup> Complaint, Dkt. 1, ¶ 33, Exs. 2.1-2.43.

point of the negotiation with Samsung and created a situation where the outcome will not be a FRAND royalty. Instead of the threat point being a reasonable royalty on the handsets Samsung produced or sold in China, Huawei created a situation where Samsung faced the threat of losing all profits on handsets it produced or sold in China. That Huawei's lawsuits were intended to obtain bargaining leverage is confirmed by a public interview of Huawei's Mr. Ding from October 2016, after the lawsuits were filed.<sup>10</sup> According to Mr. Ding, Huawei does not "really want to kick Samsung out of China." Instead, the purpose of an injunction threat "is to get the royalties in return, while using legal action as a bargaining chip."<sup>11</sup>

19. It is important to note that attempting to obtain an injunction for a FRAND-committed SEP does not necessarily violate the FRAND commitment. For example, as the DOJ and PTO note, "if a putative licensee refuses to pay what has been determined to be a F/RAND royalty, or refuses to engage in a negotiation to determine F/RAND terms, an exclusion order could be appropriate."<sup>12</sup> However, Huawei has not offered a FRAND royalty to Samsung, and Samsung has not refused to engage in negotiation with Huawei. Moreover, as I discuss below, an injunction is not necessary to compensate Huawei for any harm it has suffered from the use of its patents. Thus, Huawei has violated its FRAND commitment.

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<sup>10</sup> Ding Ex. 711.

<sup>11</sup> Ding Ex. 711, p. 4.

<sup>12</sup> U.S. Department of Justice and U.S. Patent & Trademark Office Policy Statement on Remedies for Standards-Essential Patents Subject to Voluntary F/RAND Commitments, January 8, 2013, p. 6.

#### IV. HUAWEI'S INCONSISTENT NEGOTIATION POSITIONS

20. It is my understanding that some courts and economists believe that injunctive relief should be permitted for SEPs under at least some circumstances. For example, the Federal Circuit has stated that “an injunction may be justified where an infringer unilaterally refuses a FRAND royalty or unreasonably delays negotiations to the same effect.”<sup>13</sup> I have reviewed the negotiation history between the parties here, and I have not observed any such behavior by Samsung that would justify Huawei’s pursuit of injunctive relief in China.

21. The parties began negotiations in earnest in August 2011.<sup>14</sup> Around that time, Huawei gave a presentation to Samsung in which it advertised the broad strength of its patent portfolio. For example, Huawei cited the fact that it possessed 12,693 “telecom” patents.<sup>15</sup> As Huawei has acknowledged, the patent statistics presented at this time included far more than Huawei’s SEPs.<sup>16</sup> This fact is important because as I detail below, Huawei’s proposed licensing structures and demands were a moving target, making it difficult for Samsung as a prospective licensee to understand what was being offered on what terms.

22. Huawei’s methodology for assessing the strength of its portfolio was overly simplistic as an economic matter. On one slide, Huawei advertised that it owns “8%

<sup>13</sup> *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1331-32 (Fed. Circ. 2014).

<sup>14</sup> Exhibit 715.

<sup>15</sup> Exhibit 715, HW\_Samsun\_00130409-424 . 418.

<sup>16</sup> Chen De . . . 118:5-22 . . So there is no wa that the atents that Huawei was em hasizin as valuable to Samsung in this licensing presentation were limited to SEPs, right? A. Correct.)

among the total declared LTE/SAE essential patents in 3GPP.”<sup>17</sup> However, Huawei acknowledged this measure of portfolio strength was a simple matter of “just counting them.”<sup>18</sup> An undifferentiated count of the number of essential and non-essential patents—with no accounting for which patents may have more inherent technical value—is not a reliable methodology for measuring portfolio strength , as Huawei acknowledges.<sup>19</sup>

23. However, the inadequate technical negotiations did not stop Huawei from insisting that the parties go directly to commercial discussion based on simple metrics like counting patents. Huawei’s first substantive offer came in March of 2012, when Huawei gave Samsung a presentation in Seoul, Korea.<sup>20</sup> Huawei’s presentation continued to advertise basic “patent counting” metrics that included both SEPs and non-SEPs.<sup>21</sup>

24. During the meeting, Huawei presented its first royalty proposal.<sup>22</sup> Huawei structured the deal to include “all essential patents standardized by international standard organizations.”<sup>23</sup> The technologies included 2G, 3G, 4G, 5G, wi-fi, MPEG, MP3, and

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<sup>17</sup> Exhibit 715 HW\_Samsun\_00130409-424 . 412.

<sup>18</sup> Chen Dep. . . . 116:25-17:4 . . And how did Huawei determine that its declared essential patents account for 8 percent among the total declared LTE/SAE patents in 3GPP? A. I think they just count them. They just counted them.

<sup>19</sup> Chen Dep. . . . 115:19-16:9 Din Dep. . . . 301:9-303:21 . . So it is inappropriate when negotiating a FRAND value of an SEP patent portfolio to just take the number of declared essential patents and calculate a value assuming each of those patents in that number has an equal value, correct? A. It is inappropriate.)

<sup>20</sup> Exhibit 717.

<sup>21</sup> Cheng Dep., pp. 133:7-134:5.

<sup>22</sup> Cheng Dep., pp. 134:18-135:2.

<sup>23</sup> Cheng Dep., p. 135:7-10.

others.<sup>24</sup> While Huawei was also entitled to a license from Samsung's patent portfolio Huawei nonetheless proposed a royalty rate of 1.5% of the sale price of all cellphones and other "terminals" sold by Samsung.<sup>25</sup>

25. Huawei could not identify any licensees that paid such an excessive royalty rate.<sup>26</sup> Indeed, Huawei has previously taken the position that the aggregate royalty rate across the entire industry should be a "lower single digit percentage."<sup>27</sup> Under Huawei's own logic, it would therefore be entitled to at least 25% of the industry's aggregate royalties.<sup>28</sup> This position does not make economic sense when the industry has many other more prolific SEP patentholders looking for their own portion of aggregate royalties, including Qualcomm, Ericsson, Nokia, among others.

26. As a general matter, it is economically efficient for large multi-national companies like Samsung and Huawei to reach global patent peace agreements under which both companies agree not to sue each other over patents. Such agreements decrease litigation costs, legal risk, and ultimate prices to consumers.

27. Samsung sought global peace in its offers to Huawei, beginning with its offer to Huawei in July 2012.<sup>29</sup> But Huawei consistently rejected Samsung's offers, instead insisting on a narrower range of patents. For example, Huawei's counter-offer dated

<sup>24</sup> Cheng Dep., p. 135:11-20.

<sup>25</sup> Cheng Dep., pp. 137:17-138:5.

<sup>26</sup> Cheng Dep., p. 137:8-15.

<sup>27</sup> Second Witness Statement of Xuxin Cheng, Huawei v Unwired Planet, HP-2014-0000005 (High Court of Justice Chancery Division Patents Court), ¶19 (HW\_Samsung\_00697836-842, p. 841).

<sup>28</sup> 1.5% is 25% of Huawei's proposed aggregate royalty of around 6%.

<sup>29</sup> Exhibit 718 (Term sheet from Samsung to Huawei dated July 20, 2012).

August 7, 2012 limited the scope of patents to essential patents only.<sup>30</sup> A few months later, Huawei narrowed its proposal even further to LTE patents only.<sup>31</sup> Despite narrowing the scope of the agreement significantly, Huawei maintained its demand for a 1.5% royalty.<sup>32</sup>

28. Although Huawei characterized its offers to Samsung in correspondence and in meetings as LTE-only,<sup>33</sup> and even faulted Samsung for attempting to discuss non-SEPs, Huawei's August 2012 draft term sheet purported to include rights arising from the parties' non-SEPs as part of a covenant not to sue that permitted the LTE license to be terminated if a party sued the other on non-SEPs<sup>34</sup> Similarly, Huawei's later unilateral license offer would have permitted Huawei to terminate Samsung's license to Huawei's LTE patents if Samsung attempted to challenge the validity of any Huawei patents including not only SEPs, but also non-SEPs.<sup>35</sup> Huawei attempted to deprive Samsung of substantive legal rights that have significant economic worth.

29. In addition, Huawei failed to adjust its royalty rate of 1.5% even after it decided to narrow the scope of the intellectual property rights that would be granted to Samsung. Under its original terms, payment of 1.5% would have given Samsung rights under all of Huawei's essential patents for telecommunications standards. In the draft patent license agreement Huawei sent to Samsung in April 2013, however, Huawei

<sup>30</sup> Exhibit 719; Cheng Dep., pp. 161:15-162:1.

<sup>31</sup> Cheng Dep., p. 169:2-17.

<sup>32</sup> Cheng Dep., p. 171:1-5.

<sup>33</sup> Cheng Dep. 169:2-11.

<sup>34</sup> Cheng Dep., pp. 91:20-92:22, 161:4-162:22; Exhibit 719, Cheng Dep. (HW\_Samsung\_00130702-706, p. 706).

<sup>35</sup> Cheng Dep., pp. 177:15-178:16; Exhibit 721, Cheng Dep. (HW\_Samsung\_00131515-531, p. 526).

limited the IP rights to LTE-related essential patents only yet maintained the same rate of 1.5% of the net selling price of the covered products.<sup>36</sup>

30. Despite seeking excessive royalties from Samsung for about 1.5 years, Huawei had not yet sent Samsung any technical details or information on its patent portfolio. Huawei acknowledged that “as of April 7<sup>th</sup>, 2013, Huawei had not provided a single claim chart to Samsung showing that Samsung practiced a single declared essential LTE patent.”<sup>37</sup>

31. It is also apparent from the negotiations that Huawei could not settle on a basic framework for a deal between the parties. While I have described above how Huawei had gone from a deal involving all SEPs to a deal involving only 4G, Huawei then reversed course in July 2015 and proposed a deal involving all SEPs essential to wireless standards.<sup>38</sup> By this point, Huawei had changed its demand to a rate of [REDACTED] unit for UMTS essential patents and [REDACTED] per unit for LTE essential patents.<sup>39</sup> As with its royalty demand of [REDACTED] described above, Huawei did not provide a reasoned basis for its royalty demands.<sup>40</sup> Huawei did not provide any basis for the [REDACTED] rates until December 31, 2015.<sup>41</sup>

32. Huawei ultimately filed lawsuits in both the United States and China on May 24, 2016. Its Chinese lawsuits involved the pursuit of injunctive relief on SEPs. My review of the negotiations between the parties leads me to the conclusion that, to the

<sup>36</sup> Cheng Dep., p. 170:13-171:23.

<sup>37</sup> Cheng Dep., p. 180:5-13.

<sup>38</sup> Exhibit 724; Cheng Dep., p. 191:2-5.

<sup>39</sup> Cheng Dep., p. 192:15-23.

<sup>40</sup> Cheng Dep., p. 192:15-23.

<sup>41</sup> Cheng Dep., p. 193:9-14.

extent there are any exceptions to the general rule that a SEP owner cannot pursue injunctive relief, those exceptions do not apply here. Throughout the negotiations Huawei did not provide a rigorous basis for its offers. Huawei insisted on bypassing meaningful technical negotiations to begin commercial discussions using economically invalid patent heuristics, like simple counting. Moreover, Huawei did not take a consistent approach towards the basic structure of the deal, and instead exhibited a pattern of shifting structures and demands. Finally, Huawei consistently insisted upon economically unreasonable rates that would impose a significant burden on manufacturers, competition, and the public welfare.

## V. ECONOMIC ANALYSIS OF IRREPARABLE HARM, BALANCE OF THE EQUITIES, AND THE PUBLIC INTEREST

33. I understand that under U.S. law, in order for a patentee to obtain an injunction:

A plaintiff must demonstrate: (1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction.<sup>42</sup>

34. In considering the first two factors, it is important to note that Huawei has committed to license the patents at issue on FRAND terms and conditions. This FRAND commitment indicates that Huawei has determined that royalties are sufficient to compensate it for the use of its patents, and hence that Huawei would not suffer an irreparable injury in the absence of an injunction. As the FTC has noted, “[a] prior

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<sup>42</sup> *eBay v. MercExchange, LLC*, 547 U.S. 388, 391 (2006)

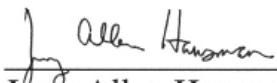
constrained by suppliers at other locations. Furthermore, the technology in the markets at issue is used in products that are made and shipped internationally.

## **H. Market Power**

55. Because Huawei's technology was chosen for the standard in each of the technology markets, thereby eliminating the ex ante alternatives, Huawei is a monopolist with market power in each of the technology markets. Any company that desires to sell 3G or 4G-compliant handsets has no choice but to use Huawei's technology. As I discussed above, SSOs require FRAND commitments in order to limit the hold up problem for SEPs. FRAND commitments can also be seen as a way to prevent the exercise of market power that is created by standardization. The FRAND commitment requires a SEP owner to charge a royalty rate that reflects ex ante competition, not the ex post monopoly.

56. Prior to seeking an injunction, Huawei had committed to license all firms on FRAND terms and conditions. Thus, companies like Samsung that sell 3G or 4G-compliant handsets could invest in research and development and the manufacturing capacity for products using those standards with the knowledge that, at most, they would have to pay a FRAND royalty. However, by seeking an injunction, as explained above, Huawei gained a "bargaining chip" that changed the threat point in the negotiations with Samsung. Thus, by seeking an injunction Huawei is seeking to exploit its market power and obtain higher royalties. These higher royalties are equivalent to higher prices than would have occurred in the absence of the injunction and are thus a violation of Section 2.

60. Given the combined effect of Huawei's violation of its FRAND commitments and its injunction-seeking tactics, I find that Huawei has attempted to monopolize the six technology markets that I previously defined. As a result of Huawei's hold up strategy, Samsung not only faces the repercussions of injunctions but Samsung is also forced to litigate the issues on patents that should have been licensed under FRAND terms, not only in federal district court but also in China. At a minimum, Samsung's injury from the antitrust violation is comprised of the cost of multiple litigations, attorneys' fees, and the experts' fees paid to me and my team, and associated costs.<sup>51</sup>



Jerry Allen Hausman  
April 27, 2018

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<sup>51</sup> I understand that the specific harm will be quantified by Samsung's damages expert at a later date when these costs have been tabulated.

**EXHIBIT 11**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

References material marked HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY Confidential

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION

)  
HUAWEI TECHNOLOGIES CO., LTD., )  
HUAWEI DEVICE USA, INC., and )  
HUAWEI TECHNOLOGIES USA, INC., )  
Plaintiff(s)/Counterclaim )  
Defendants, )  
vs. )  
SAMSUNG ELECTRONICS CO., LTD, )  
SAMSUNG ELECTRONICS AMERICA, )  
INC., ) Case Number: 3:16-cv-2787-WHO  
Defendants / Counterclaim- )  
Plaintiffs, ) **References Discovery Material Marked  
“Highly Confidential - Attorneys’ Eyes  
Only”**  
and )  
SAMSUNG RESEARCH AMERICA, INC., )  
Defendant, )  
v. )  
HISILICON TECHNOLOGIES CO., LTD., )  
Counterclaim-Defendant. )

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**Rebuttal Report of Dr. Charles L. Jackson**

Regarding the 3GPP Patent Landscape

## 1 Introduction and Overview

I am the same Charles Jackson that provided an opening report in this matter on April 27, 2018 (“Jackson Opening Report”).

This report (1) compares databases of patents that have been declared as essential to LTE with regard to their similarity, differences, and apparent errors and (2) responds to assertions made by Dr. Gregory Leonard in his expert report dated April 27, 2018 (“Leonard Opening Report”) regarding (1) the use of contributions analysis and (2) what he refers to as “true LTE” patents.

As to the first part of my assignment in this report, I compare (1) the Concur IP census and essentiality database (“the C&E database”) of worldwide patents that have been declared as essential to 3GPP standards, of which I oversaw the creation and described in my initial report, with (2) two lists of patents that I understand were produced by Samsung, which purport to list patents that have been declared as essential to the LTE cellular standard. I understand that the two patent lists were used by Dr. Leonard as the basis for many of the opinions expressed in his April 27, 2018 report; therefore, I will refer to the two patent lists as “Dr. Leonard’s patent lists.”

My two primary conclusions after comparing the C&E database to Dr. Leonard’s patent lists are that (1) both contain initial sets of declared patents that are reasonably similar in size, however (2) the essentiality check undertaken during creation of the C&E database, which required analysis of the patent claims, makes the C&E database a more reliable source for information about the parties’ respective SEP portfolios because in addition to making an essentiality assessment, it also, for example, screened out irrelevant patents that were included initially in the C&E database by mistake. This screening or checking process, together with the fact that the Leonard patent lists appear to have to have been created without the use of a comparable screening mechanism, means that the counts of LTE families in the C&E database are highly likely to provide a better estimate of a firm’s LTE SEPs than is a simple count of the declared LTE families in Dr. Leonard’s patent lists. In my opening report I reviewed several earlier landscaping studies and pointed out that several of them found that the ratio of essential patents to declared patents varied substantially among firms.<sup>1</sup> Essentiality analysis is the only way the

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<sup>1</sup> For example, see Jackson Report at 40.

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variation in the ratio of actual-SEPs to declared-SEPs can be calculated and used to improve one's understanding of a firm's patent portfolio.

As to the second part of my assignment, I have considered Dr. Leonard's opinion that contribution measures are not a reliable indicator of patent portfolio value. I disagree with Dr. Leonard's conclusion. As I explained in my opening report, and further below, I believe that an analysis of approved contributions can serve as a reasonable and reliable indicator of the strength of an SEP portfolio, particularly with respect to parties that are active participants in the standard-setting process. As I have explained, Huawei, Samsung, and third parties appear to share this view. In this report I also address Dr. Leonard's opinion on "true LTE" patents, which reflects his apparent belief that LTE patents with priority dates before Jan. 1, 2009 are somehow more valuable than are patents with later priority dates. As I discuss below, this ignores the significant—and critical—contributions and features that were added to the LTE standard in post-Release 8 versions of the standard.

## 2 Comparison of the C&E Database with Dr. Leonard's Patent Lists

In my initial report, I described a Census and Essentiality (C&E) database which was compiled under my direction and which contains information on more than 150,000 patents. In his initial expert report, Dr. Leonard states that he calculated various quantities such as Huawei's share of worldwide 4G SEP patent families "from patent-level data collected from ETSI and family-level data collected from PatBase."<sup>2</sup> However, Dr. Leonard does not describe how he calculated those quantities. Rather, two lists were provided in discovery that I understand contain the data that Dr. Leonard used to calculate the figures he reports for various parties' SEP portfolios. The methodology by which these lists were created is not described anywhere in Dr. Leonard's report (nor in any other Samsung expert's report to my knowledge).

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<sup>2</sup> For example, see Exhibit 4b.. These spreadsheet files are named *Huawei Worldwide LTE Patent List.xlsx* and *US LTE Patent List.xlsx*

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One of Dr. Leonard's lists states that it contains information on all U.S. patents that are members of families declared as SEPs to LTE at ETSI. The other is a list that states that it contains information on all LTE SEPs owned by Huawei on a "worldwide" basis.<sup>3</sup>

Dr. Leonard's list of U.S. SEP LTE patents (hereinafter referred to as LeonardLTE\_US) contains information on 16,767 patents divided into 9,475 families. For each patent, the list contains four entries for each patent – family number, patent number, jurisdiction (always equal to U.S.), and assignee. Dr. Leonard's list of Huawei's worldwide LTE SEP patents (hereinafter Leonard\_H\_W) contains information on 2,899 patents divided into 974 families. It has the same four entries as does the other database; however, the jurisdiction entry takes on differing values but the assignee entry contains "Huawei" in all cases.<sup>4</sup>

Although the C&E database contains much more information than the Leonard patent lists, in those categories where the data overlaps, by some measures, the information in Dr. Leonard's lists match up reasonably well with the corresponding information in the C&E database. However, there are some important differences that I discuss later in this report. Table 1 displays basic information about the number of patents and families in the C&E database and Dr. Leonard's purported list of U.S. LTE SEPs.

<sup>3</sup> I put worldwide in quotation marks because the list contains information on patents in nine major jurisdictions—AU, BR, CN, EP, JP, KR, RU, US, and ZA—not the entire world.

<sup>4</sup> In the remainder of this section, I focus on a comparison of LeonardLTE\_US and the C&E database because I understand that the U.S.-specific patent counts are relied upon by Dr. Leonard as the base for his calculation of adjusted patent shares for Huawei and others. See Leonard Oenin Reort at 169. However, I expect that many of the errors I identify with respect to Leonard LTE\_US would also likely be found in Leonard\_H\_W.

**Table 1. Comparing the Information about U.S. LTE Patents from the Two Sources**

Aspect	LeonardLTE_US	C&E (declared to LTE and issued)	Observations
Number of families (all patents)	9,745	8,463	The family count for the C&E database considers only patent families that have been declared to LTE and that contain an issued family member. C&E also contains information on applications including applications in families that do not contain any issued patents. The family count for LeonardLTE_US includes families of a number of expired patents and withdrawn patents.
Number of families (patents issued 2/21/17 or earlier)	8,228	8,463	The C&E database was prepared based on data available from ETSI on or before 1/1/17. The latest U.S. patent in the database is US9578635, which was issued 2/21/17.
Number of families with patents in both databases (LTE issued 2/21/17 or earlier)		7,319	86% of the families in C&E contain patents that are also in LeonardLTE_US.
Number of patents	16,767	15,361	
Number of patents issued 2/21/17 or earlier	16,009	15,361	
Number of patents issued 2/21/17 or earlier less withdrawn patents	15,893	15,351	133 of the patents in LeonardLTE_US are withdrawn, meaning the USPTO has confirmed those patent numbers do not exist. 116 of those were issued on or before 2/21/17. In contrast, only 10 of the patents in C&E are withdrawn patents and C&E notes that withdrawal for 3 of them and implicitly identified a fourth withdrawn patent

As can be seen from Table 1, the list LeonardLTE\_US contains more patents and more families than does the U.S. C&E database, and LeonardLTE\_US includes patents issued over slightly longer period of time than the C&E database. (Here I am using the U.S. C&E database to refer

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to families containing issued U.S. patents and declared as LTE SEPs in the larger worldwide C&E database.). The U.S. C&E database includes data through February 21, 2017.<sup>5</sup> More than 700 patents in LeonardLTE\_US have issue dates later than the most recent patent in U.S. C&E. In addition, 133 of the patents in LeonardLTE\_US are withdrawn patents; 10 of the patents in U.S. C&E are also withdrawn patents. After adjusting the patent counts to take into account the differing time periods and the withdrawn patents, the number of patents in the U.S. C&E database is 97% of the number in LeonardLTE\_US.

Although the vast majority of patents appear in both databases, there are patents in U.S. C&E that do not appear in LeonardLTE\_US, and vice versa. I examined some of these one-source-only patents in order to understand why they appear in one database and not the other. I also examined some patents with assignees that seemed unlikely to hold 3GPP SEPs. My primary purpose was to understand the nature of the patents that appeared in one set of patents but not the other; I was not trying to exhaustively catalogue the differences or to classify each of those patents. I spent roughly the same amount of time analyzing patents from U.S. C&E and from LeonardLTE\_US. I discuss the results of that analysis below.

## 2.1 Problematic Patents in LeonardLTE\_US

### 2.1.1 Withdrawn Patents

I discovered that a number of the patents in LeonardLTE\_US were withdrawn patents.<sup>6</sup> To follow up on this discovery, I obtained a list of withdrawn patents from the U.S. Patent and Trademark Office (USPTO) website and searched LeonardLTE\_US for withdrawn patents. I found 133 such patents.

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<sup>5</sup> The C&E database contains a field indicating whether a patent was issued and unexpired as of January 1, 2017 (a Sunday—a day on which patents are not usually published by the USPTO). Consequently, the database permits analysis of all issued patents as of December 31, 2016.

<sup>6</sup> The patent office characterizes withdrawn patents saying,

This listing consists of patent numbers that do not correspond to issued patents. These patent numbers are referred to as “withdrawn patent numbers.”

See <https://www.uspto.gov/patents-application-process/patent-search/withdrawn-patent-numbers>.

### 2.1.2 *Expired Patents*

In addition to more than 100 withdrawn patents, LeonardLTE\_US contains many expired patents. For example, it includes US5590408 and 181 additional patents with earlier patent numbers. US5590408 was issued on December 31, 1996. Clearly, most or all of these patents would have expired by 1/1/2017. Of these, 123 are in families that have no member issued after December 31, 1996.

Comparison of LeonardLTE\_US with the U.S. C&E database finds 4,337 patents in LeonardLTE\_US that are shown in the U.S. C&E database as not alive as of 1/1/17. These include (1) patents that had expired by 1/1/17 and (2) the 758 patents in LeonardLTE\_US that were issued after 1/1/17. Taking into account the patents issued after 1/1/17, there appear to be more than 3500 expired patents in LeonardLTE\_US . The number of patents and families in LeonardLTE\_US does not measure the number of LTE SEPs or SEP families for which licenses are required today or for which they would have been required on 1/1/17.

### 2.1.3 *Flawed Approach to Defining Patent Families*

LeonardLTE\_US does not use INPADOC families to define families. This differs from the family definition used by ETSI and by many other landscape studies.<sup>7</sup> ETSI relies on INPADOC/Espacenet family definitions, as shown for example by the below image:

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<sup>7</sup> In my earlier report, I identified several landscape studies that used INPADOC families. These include Fairfield (2007, 2009, 2010), Thomson Reuters, and PA Consulting. See Jackson Opening Report at 24-28; 66-72; 72-86.

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**Explanation of used font styles on PATENT FAMILY members:**

- Dark font: PATENT FAMILY members explicitly disclosed by the Declarant in the IPR Information Statement Annex of the ETSI IPR Licensing Declaration Form, on a voluntary basis (Clause 4.3 of the ETSI IPR Policy).
- Light font: PATENT FAMILY members imported from the external database "Espacenet" of the European Patent Office, on the basis of the basis patent's priority numbers. For the avoidance of doubt, in case of discrepancy and/or inconsistency between the content of any ETSI IPR Licensing Declaration form signed by the Declarant, and of the ETSI IPR Online Database, the signed version of the ETSI IPR Licensing Declaration form shall prevail.

**Close**

Consequently, the families in LeonardLTE\_US are inconsistent with the ETSI definition of patent families and in general there are slightly more of them than there are in the U.S. C&E database.

In contrast, the U.S. C&E database defines patent families in the same way that ETSI does and contains more information that allows tracking divisional patent families. The U.S.C&E database subdivides INPADOC families by separating out divisional patents and categorizing such patents in a separate family for purposes of essentiality analysis. Consequently, there are 131 families in the U.S. C&E database that are subdivisions of families in LeonardLTE\_US. For example, LeonardLTE\_US family 34389782 contains three patents. Those three patents, along with seven other patents from other jurisdictions, are contained in a single predivisional family in the U.S. C&E database. Sixty families in LeonardLTE\_US are subdivided this way in the U.S. C&E database. So, the subdivision process increases the count of families in the U.S. C&E database by 73 relative to the count in LeonardLTE\_US.

#### 2.1.4 Unexplained Approach to Identifying LTE Patents

I explained in my opening report that determining whether a patent has been declared to be essential to LTE is not as simple a task as one might assume. See Jackson Opening Report at

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108-13. People who submit declarations to ETSI declaring patents as potentially essential often use informal terms to identify the standards to which the disclosure applies or omits such a description of standards or projects altogether. For that reason, to prepare the C&E database, under my supervision and with my review, Dr. Ding prepared a table that maps declared ETSI "standards" and projects to GSM, UMTS, and LTE. *Id.* at 108. In the census process, using this mapping table and the declared standards for a patent, each patent is categorized as relevant to GSM, UMTS, LTE, or something else. For example, if a patent is declared essential to ETSI TS 136.211 (also known as 3GPP TS 36.211), the patent is categorized as a patent declared essential to LTE.

In contrast, Dr. Leonard provides no description of how he determined what qualifies as an "LTE" patent. Dr. Leonard also provides no description of any technical qualifications he has that suggests he could reliably classify LTE patents based on the sometimes informal and disparate technical terminology used in ETSI declarations. Dr. Leonard's lack of recognition, lack of explanation, and lack of qualifications to address this issue leads to a lack of confidence in his data.

### 2.1.5 *Other Errors Resulting in Incorrect Information*

#### 2.1.5.1 US7436764

This patent is not in the U.S. C&E database, but is in LeonardLTE\_US. I attempted to understand why. LeonardLTE\_US shows US7436764 as assigned to TECHNICOLOR. Google Patents shows this patent as originally assigned to LG Electronics Inc. and now assigned to Thomson Licensing SA. The family in LeonardLTE\_US for that patent (32516199) has only one U.S. patent. ETSI shows Thomson Licensing as the assignee. See Figure 1.

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**SELECT LOCAL PATENTS**

<b>Select local patent</b>				
Application Number	<input type="text"/>	Application date	<input type="text"/>	
Publication number	<input type="text"/> US7436764	Publication date	<input type="text"/>	
Patent title	<input type="text"/>			
Patent holder company(ies)	<b>Add</b>			
Country of registration	<input checked="" type="radio"/> US - UNITED STATES			
Patent office organisation	<input type="radio"/> Select organization			
<input type="button" value="Search"/> <input type="button" value="Reset"/>				
Application number	Publication number	Title	Holder companies	Country or Organisation
US20050150317	US7436764 B2 US2005286483 A1	NOTIFICATION OF CONTROL INFORMATION IN WIRELESS COMMUNICATION SYSTEM	THOMSON LICENSING	UNITED STATES
<input type="button" value="Select"/> <small>Page 1 of 1, items 1 to 1 of 1.</small>				

**[Return]**

**Figure 1. ETSI Search for US7436764**

The ETSI database shows the patent as declared to UMTS; it does not show it as declared to LTE. ETSI also shows it as declared to Release 14, but it is declared to TS 125.346, a UMTS standard. See Figure 2.

**DYNAMIC REPORTING**

Dynamic reporting result					
<input type="button" value="Modify existing query"/>	<input type="button" value="New query"/>				
ETSI Projects	Standards	Companies	Patent Offices	Patent Holders	Patent
+ 4	1	1	1	1	2
+ 3GPP	+ 1	1	1	1	2
	+ TS 125.346	+ 1	1	1	2
- 3GPP-radio	+ 1	1	1	1	2
	+ TS 125.346	+ 1	1	1	2
- 3GPP-Release-14	+ 1	1	1	1	2
	+ TS 125.346	+ 1	1	1	2
- UMTS	+ 1	1	1	1	2
	+ TS 125.346	+ 1	1	1	2

**Export query result to CSV**

Open CSV file directly in browser  
 Export CSV file in background  
 CSV delimiter:

**Figure 2. ETSI Report on Declarations for US7436764**

The 3GPP website identifies Specification # 25.346 as a 3G (UMTS) standard. See Figure 3.

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**Figure 3. 3GPP Description of 25.346**

Therefore, Dr. Leonard's LeonardLTE\_US list incorrectly included this non-LTE patent and listed the wrong assignee.

#### 2.1.5.2 US7944947

LeonardLTE\_US shows US7944947 to be assigned to TECHNICOLOR; Google Patents shows it as assigned to Nokia Oy AB. I searched the ETSI database for this patent and for the EP patent in the same family. However, I was unable to find either of them in the ETSI database. I examined the specification of the patent. I concluded that this is a patent for Wi-Fi and that it does not appear to be applicable to LTE.<sup>8</sup> Therefore, Dr. Leonard's LeonardLTE\_US list incorrectly included this patent.

<sup>8</sup> Specifically, US7944947 is for a method for circumventing limitations created by the use of Network Address Translation (NAT) devices.

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### 2.1.5.3 US9374709

LeonardLTE\_US shows US9374709 to be assigned to General Motors LLC. It is the only patent in its family. See Figure 4. General Motors is not shown by ETSI to be a firm that has declared patents, and a search for the patent on the ETSI database did not find it. See Figure 5 and Figure 6. The patent is wireless related but it seems unlikely to be an LTE SEP because (1) it describes an implementation detail for user equipment (UE) that does not appear to be standards relevant and (2) it requires a power-control technique that is lacking in UMTS and LTE.<sup>9</sup>

The screenshot shows the Espacenet Patent search interface. At the top, there is a logo for the European Patent Office (EPO) and links for Deutsch, English, Français, Contact, and Change country. Below the header, a navigation bar includes links for About Espacenet, Other EPO online services, Search, Result list, My patents list (0), Query history, Settings, and Help. The main content area displays the Family list for US9374709 (B2) from 2016-06-21. A sidebar on the left lists various patent document types such as Bibliographic data, Description, Claims, Mosaics, Original document, Cited documents, Citing documents, and INPADOC legal status. The right side of the screen shows the patent details for US9374709 (B2), including the inventor (PEIRCE KENNETH L [US]), applicant (GEN MOTORS LLC [US] GM GLOBAL TECH OPERATIONS INC [US]), CPC classification (H04L67/12, H04W12/08, H04W12/12 (+1)), IPC classification (H04W12/08), publication info (US2014213216 (A1) 2013-01-29, 2014-07-31, US9374709 (B2) 2016-06-21), priority date (2013-01-29), and a Global Dossier link.

**Figure 4. Espacenet Family for US9374709**

<sup>9</sup> The patent requires the UE to send information back to the base station that causes the base station to reduce transmission power. In UMTS and LTE the signals sent by the base station are received by many UEs at the same time. If the base station reduced power, UE on the edge of the cell's coverage area would lose service.

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**ETSI IPR Online Database**

**Dynamic reporting**

ETSI Projects	Standards	Companies
421	10262	267

**Search declaration**

Reference

Declaring companies

Gemalto S.A.  
Gemplus SA  
General Dynamics UK Limited  
Giesecke & Devrient Gmbh  
Golden Bridge Technology Inc.  
Grundig E.M.V.

Work item no. / Standard no. / Specification no.

Type

Declaration date from

**Figure 5. List of Declaring Companies in ETSI Database Showing General Motors is not Listed**

**SELECT LOCAL PATENTS**

Select local patent

Application Number  Appl

Publication number  Publ

Patent title

Patent holder company(ies)

Country of registration  US - UNITED STATES

Patent office organisation  ---Select organization---

Application number	Publication number	Title	Holder companies
No records to display.			
1			

**Figure 6. Search for US9374709 in ETSI Database**

One possible explanation is that the patent US9374709 that appears in Dr. Leonard's list is meant to be US9374704, a Nokia Technologies Oy patent declared to LTE that does not appear in

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LeonardLTE\_US. A transcription error or a failure of a text recognition program may have caused it to be entered as US9374709.

Given the above, one must conclude that Dr. Leonard's LeonardLTE\_US list incorrectly includes this patent and its family. This incorrect inclusion inflates the count of families and dilutes Huawei's share of U.S. LTE families. If the essentiality analysis undertaken in the C&E database had been implemented by Dr. Leonard, an error such as this (and any other similar errors that may have been made in Dr. Leonard's list) would very likely have been detected and fixed. Instead, because Dr. Leonard's lists appear to be simply be a compilation of declarations without any analysis of individual patents, such errors remained undetected when Dr. Leonard used the data in his opening report.

#### 2.1.5.4 US8180048

Another of the patents included in LeonardLTE\_US is US8180048 (the U.S. C&E database contains the same patent but denoted as US8180048B2). This patent is assigned to an individual. I did not find it declared at ETSI nor did I find the inventor's name as a "Company Name" at ETSI. Both the Leonard LTE\_US and the U.S. C&E database contain this patent as a declared LTE SEP but the essentiality analysis for C&E determined that it was not essential and therefore it would not have been included in the total number of deemed essential LTE patents.

A Panasonic declaration filed on March 16, 2010, declared Chinese application 2004843976 to be essential to LTE (TS 36.211 and 36.212).<sup>10</sup> However, CN2004843976 is the application for the Chinese member of the family of US8180048. CN2004843975 is the application for the Panasonic patent. It appears that someone at Panasonic made a typing or transcription error that resulted in an incorrect patent family in the ETSI database. The fact that both the U.S. C&E database and LeonardLTE\_US mistakenly contain this patent shows how initial errors that are beyond the control of those compiling such data collections propagate and are hard to detect. It also demonstrates the necessity to actually examine the underlying patents to confirm their relationship to the standard if one wishes to conduct an accurate assessment of SEP portfolios. The difference in output of the two databases, which both contained this initial error, makes this

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<sup>10</sup> The disclosure appears to me to contain CN200480043975.

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point clear: The US8180048 patent inappropriately counts as one SEP family in LeonardLTE\_US; by contrast, in U.S. C&E, the patent was deemed not essential and therefore does not contribute to the totals of deemed SEPs.

#### **2.1.6 Impact of Errors in LeonardLTE\_US on Dr. Leonard's Conclusions**

Dr. Leonard relies on the data in LeonardLTE\_US to arrive at the conclusion that "Huawei's share of US SEPs is equal to 4.2%."<sup>11</sup> As noted above, Dr. Leonard's patent lists include hundreds of withdrawn and expired patents in his data. These patents inflate the number of LTE families and hence, reduce Huawei's share of U.S. LTE patent families.

Dr. Leonard also relies on his data for the conclusion that, if one uses "number of US SEP families as the 'base' of relevant SEP technologies relevant to LTE . . . Huawei's portfolio strength is considerably weaker in other regions than in the US."<sup>12</sup> It is difficult to understand why, if one wanted to know Huawei's portfolio strength in South Africa, for example, one would consider the ratio of Huawei's South Africa patent families to the number of total US declared patent families. Nevertheless, by including U.S. LTE patent families that ought not be included, Dr. Leonard's report of Huawei's portfolio strength in specific regions is likely underestimated as well.

I also note that, in Exhibit 5, Dr. Leonard attaches a weight to Huawei's Chinese LTE patent families of 8% (the number of Chinese SEP families divided by the number of U.S. SEP families). For the reasons discussed above, even if this calculation made sense (which it does not given the mismatch between the numerator and denominator), it is wrong given the errors in LeonardLTE\_US. Furthermore, at Exhibit 6a, Dr. Leonard calculates that the relevant weighted average fraction of Samsung's manufacturing that takes place in China to be 46%. Similarly, in paragraph 175 he states, "its [Huawei's] Chinese SEP portfolio should only have a small impact on Huawei's worldwide rate payable by Samsung *given the small percentage of Samsung's sales [that] occur in China.*" (emphasis added). Therefore, Dr. Leonard appears to ignore the fact that Huawei's Chinese LTE patents have value if they cover Samsung's Chinese

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<sup>11</sup> Leonard Opening Report at ¶ 166 (citing Exhibit 4b).

<sup>12</sup> *Id.* at ¶ 169.

manufacturing activities, even though the devices manufactured in China may be disproportionately sold in other jurisdictions.

### 2.1.7 Concluding Thoughts

The foregoing examination of problematic patents included in LeonardLTE\_US is not an exhaustive analysis of potential issues with that patent list. Rather the examples above are illustrative – they show that LeonardLTE\_US contains more than 100 withdrawn patents and hundreds of expired patents not identified as such, and that Dr. Leonard included in his current patent counts patents with incorrect assignment information and patents that do not appear to be declared as LTE SEPs, with no mechanism for reviewing and screening out such errors. Moreover, LeonardLTE\_US is missing patents, such as US5862171, that should be listed. The exemplary problematic patents discussed above show some of the difficulties associated with performing this type of analysis, and why taking the additional steps implemented when the C&E database was created can mitigate against such errors.

A more general assessment of the merits of the Leonard patent lists is made difficult by the fact that the derivation of the lists themselves remains largely a mystery. Recall that Dr. Leonard's report provides only a brief, one-sentence explanation of the derivation of this database:

Huawei's LTE Patent Families are calculated from patent-level data collected from ETSI and family-level data collected from PatBase and reflect data as of May 31, 2017.<sup>13</sup>

Dr. Leonard does not describe how family membership is determined other than that it is from PatBase. Comparing the list of patents with INPADOC families from Espacenet indicates to me that PatBase does not use INPADOC families to define patent families.

By contrast, the C&E database offered by Huawei in this case permits auditing of the ETSI-declaration information. Specifically, the record for each family contains a field indicating whether the patent was declared to ETSI and another field showing to which standards and publications it is declared to be essential. If one wishes to check the declaration status of a particular patent, one can retrieve all members of the patent family and see which members are shown as declared. LeonardLTE\_US provides no comparable information or way to trace back

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<sup>13</sup> Leonard Opening Report at Exhibit 5, Notes.

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the determination that a patent is declared essential to LTE (indeed, there is no indication that essentiality determinations were made in compiling the Leonard patent lists).

## 2.2 Similar Analysis of the C&E Database

### 2.2.1 Analysis of Withdrawn Patents

I also used the list of withdrawn patents (discussed above with respect to my analysis of the Leonard patent lists) to search the C&E database for withdrawn U.S. patents. I found 10 such patents in the C&E database's initial universe of reviewed patents. Of those 10, 8 were also among the 133 withdrawn patents in LeonardLTE\_US. One of the 10 was excluded during the C&E database's essentiality analysis because it lacked an INPADOC family ID.<sup>14</sup> Further, three of the 10 had "withdrawn" noted in the claim analysis. Another one of the withdrawn patents was characterized as "not relevant." Thus, 5 of the 10 were excluded from essentiality analysis altogether. Moreover, none of the 10 were identified as containing claims found to be essential. Therefore, the presence of these patents in the C&E database's initial set of patents did not affect the identification or final reporting of deemed SEPs or SEP families that resulted from the final C&E database.

### 2.2.2 Analysis of Other Patents

As I did in analyzing LeonardLTE\_US, I have analyzed a sampling of those patents which appear in Dr. Leonard's patent list but do not appear in the U.S. C&E database (or vice versa) or show other peculiarities. I discuss those patents below.

#### 2.2.2.1 US8483166

Patent US8483166 does not appear in the U.S. C&E database but does appear in LeonardLTE\_US. The Chinese member of the family containing US8483166 was declared by Huawei (the patent owner) on March 4, 2009. I downloaded the PDF file containing the declaration from the ETSI website. The declaration submitted to ETSI has the Chinese patent number indicated in faint print. Figure 7 shows the relevant portion of that declaration. An enlarged image of the application number has been inserted into that figure. I used the text

<sup>14</sup> A search of Espacenet for this withdrawn patent returns nothing. Because the patent is withdrawn, Espacenet does not supply an INPADOC family ID.

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recognition process in Adobe Acrobat to create a text version of the image. The patent number was rendered as “20071 016606 6. R,” which is not correct. If ETSI had used a text recognition engine with comparable performance, it would not have entered the correct patent number into its database.

The image shows a table from the ETSI Rules of Procedure, 26 November 2008, Page 30. The table contains two rows of patent declarations. The first row is for UMTS 3GPP TS 23.4 01, filed by Huawei Technologies with application number 200710166066.8. The second row is for UMTS 3GPP TS, filed by Huawei Technologies with priority date 200710169584.5. Red arrows point to the application numbers in both rows.

UMTS	3GPP TS 23.4 01	Huawei Technologies	200710166066.8	resources to treatment: A network through the evolution of the old temporary identity have network access methods and devices	CN
UMTS	3GPP TS	Huawei Technologies	200710169584.5	Achieve a switching network optimization	CN

**Figure 7. Image of Declaration to ETSI (Annotation Added)**

There is a second possible complication. Looking at the image in Figure 7, the application number appears to be 200710166066. I searched Espacenet for CN200710166066, but the search found nothing.<sup>15</sup> I also searched for CN20071166066 (I removed the zero between the two ones), and I found the Chinese member of the family containing US8483116. Espacenet displays a priority number as “CN20071166066 20071101.” As of May 2018, the ETSI database reports that family CN20071166066 is declared. But if at the time Concur IP downloaded the ETSI database, that family identifier was incorrect (due to, for example, either a scanning problem or some other issue) this family would not have been properly identified. However, because the patent is owned by Huawei, this error in the U.S. C&E database improperly reduces Huawei’s count of declared SEPs.<sup>16</sup> In other words, correcting the error will increase Huawei’s count of declared SEPs and potentially increase Huawei’s count of essential SEPs as well.

<sup>15</sup> Espacenet requires the CN prefix to identify the jurisdiction.

<sup>16</sup> Although this error in the database was detected before my initial report was prepared, the error was not corrected thereby ensuring that Concur IP prepared the database using the predefined process and protocol, and treated patents from all companies equally to ensure neutrality and objectivity. Concur IP had not been informed that Huawei was the underlying sponsor of the project.

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### 2.2.2.2 US9136956

The C&E database includes US9136956B2 in its family 10033 (one of the largest families, with 222 US LTE patents). Unwired Planet is shown as the assignee. Google Patents shows Comcast Cable Holdings LLC as the assignee. Espacenet shows US9136956B2 in a family with 410 members and several different assignees including Broadcom, Comcast, and Norand. This patent was mistakenly included in the C&E database for two reasons. First, ETSI specifies patent families using INPADOC families. INPADOC families are based on shared priority dates and inventor names.<sup>17</sup> In some cases, coincidence of names and dates may result in unrelated patents being classified in the same patent family. Espacenet corrects INPADOC family IDs when such errors are reported.<sup>18</sup> Such corrections make it hard to go back and identify the source of such mistaken families. However, the inclusion of this patent in C&E has no effect on an analysis based on patent family counts, because the inclusion does not increase or decrease any family counts. I understand that Mr. Lasinski's analysis, for example, relied on deemed patent families, not individual patents; therefore, this error would have had no impact on his analysis.

### 2.2.2.3 US9131524

The U.S. C&E database shows US9131524B2 to be assigned to Anchor Orthopedics. Google Patents shows it to be assigned to Qualcomm Inc. This error in the assignee has no impact on any analysis of Huawei's or Samsung's portfolios, because (although the assignment information was incorrect) the patent would have been counted in the total number of families declared.

## 2.2.3 *Concluding Thoughts*

These above examples are merely meant to illustrate the type of errors that I was able to identify in the C&E database. As one can see from the discussion above, in large part such errors have had minimal—if any—impact on the results of the C&E database study, or how I understand those results have been utilized by Mr. Lasinski in this litigation. As can be seen, like

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<sup>17</sup> See [https://worldwide.espacenet.com/help?locale=en\\_EP&method=handleHelpTopic&topic=patentfamily](https://worldwide.espacenet.com/help?locale=en_EP&method=handleHelpTopic&topic=patentfamily)

<sup>18</sup> The Espacenet document correction process is described at [https://forms.epo.org/searching-for-patents/technical/espacenet/error-form.html?01\\_hi\\_InterfaceCode=EP&02\\_hi\\_ViewPane=Biblio&03\\_hi\\_DebugData=test&10\\_ri\\_DocumentNo=US2015203075A1](https://forms.epo.org/searching-for-patents/technical/espacenet/error-form.html?01_hi_InterfaceCode=EP&02_hi_ViewPane=Biblio&03_hi_DebugData=test&10_ri_DocumentNo=US2015203075A1)

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LeonardLTE\_US, there were some identifiable errors in the U.S. C&E database, such as the inclusion of some withdrawn patents. However, my review of both sets of data indicates that the magnitude and types of errors I found in the C&E database are much less significant than in LeonardLTE\_US list; in my view, this shows that the C&E database is much more reliable overall than the LeonardLTE\_US list. This is likely a result of the essentiality analysis component of the C&E database, which eliminates many, in fact—probably the vast majority—of these errors.

### 2.3 Comparison of the Leonard\_H\_W list and the C&E Database

I also examined Dr. Leonard's second list—Leonard\_H\_W—to understand the types and magnitude of errors that are present. As I summarize below, Dr. Leonard's second list contained many of the same systematic errors as his first list. For instance, Dr. Leonard's second list contains expired patents that are not identified as such. As with LeonardLTE\_US, Dr. Leonard has not explained the methodology he used to compile this supposed list of Huawei's LTE patents.

Table 2 displays counts of patents in Leonard\_H\_W and the C&E database (here C&E database means patents issued in the same nine jurisdictions as those in Leonard\_H\_W.

**Table 2. Comparing Information about Worldwide Huawei Patents from the Two Sources**

Aspect	Leonard_H_W	C&E (declared to LTE and issued in nine jurisdictions)	Observations
Number of patents	2,899	3,085	C&E database considers only patent families that have been declared to LTE and that contain an issued family member.
Patents common to both and alive on 1/1/17 in C&E, assigned to Huawei, and declared to LTE in C&E	1,821	1,821	

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Number of patents in Leonard_H_W that are also in C&E but not declared to LTE or not assigned to Huawei or both.	106	n/a	
Number of patents in Leonard_H_W that are in C&E but were not alive on 1/1/17	215	n/a	This is a significant number of expired patents.

In order to understand the origin of that patents that are in both Leonard\_H\_W and the C&E database but that are not marked in the C&E database as declared to LTE (i.e., they are shown as declared to GSM or UMTS or both) I examined several such patents. CN1278532 is one such patent. The C&E database shows this patent as declared essential to UMTS. ETSI shows it declared only to the 25 series standards 25.331 and 25.346. It is also shown as declared to Release 13. TS 25.346 is for MBMS in UMTS. Several TSs define MBMS for LTE including 36.444, 36.441, and 36.442. Figure 8 shows the 3GPP description of 25.346 as a 3G (UMTS) TS but does not show it as an LTE TS.

3GPP  
+ GLOBAL INITIATIVE  
Portal

General Versions Responsibility Related Specification #: 25.346

Reference: 25.346

Title: Introduction of the Multimedia Broadcast/Multicast Service (MBMS) in the Radio Access Network (RAN); Stage 2

Status: Under change control CR

Type: Technical specification (TS)

Initial planned Release: Release 6

Internal:

Common IMS Specification:

Radio technology:  2G  3G  LTE  5G

Click to see all versions of this specification

Figure 8. 3GPP Description of 25.346

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EP1677452 is another such patent. Again, the C&E database shows it as declared as essential to 25.346.

US9461795 is a third such patent. The C&E database shows it declared to be essential to 25.212 and 25.214. These are both UMTS standards; they are not LTE standards.

Thus, all three of the patents I checked in this category were UMTS patents that were incorrectly classified in Leonard's lists as LTE patents.<sup>19</sup>

I also reviewed patents that are in Leonard\_H\_W that are not in the C&E database.<sup>20</sup>

EP0811909 is one such patent. It is titled "Arithmetic circuit for calculating a square-root of a sum of squares." I checked the ETSI database and found that it was declared on July 5, 2013.

JP4874799 is also in Leonard\_H\_W but not in C&E. I checked the ETSI database and found it declared to LTE.

CN1115836 is also in Leonard\_H\_W but not in C&E. It is a telecommunications patent and the specification shows that it relates to UMTS. I searched for it on the ETSI website but did not find it.

Thus, of the six patents I examined that were treated differently in C&E and Leonard\_H\_W, four were classified correctly in C&E and two were classified correctly in Leonard\_H\_W. This is further evidence, quite apart from the added checking provided by the essentiality analysis, that C&E is more reliable than Leonard\_H\_W.

## 2.4 Conclusions Regarding Comparison of the C&E Database and Dr. Leonard's Lists

If one takes into account the expired patents, the C&E database and Dr. Leonard's list regarding Huawei's share of U.S. LTE patents are reasonably similar.

<sup>19</sup> The first two patents were the first on my list of patents in this category; the third is the last on the list.

<sup>20</sup> I reviewed the first three patents on my list of patents in this category.

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Although the starting sets of declared patents in Dr. Leonard's lists and the C&E database are somewhat comparable (particularly if expired patents are included), there are two key differences between the C&E database and Dr. Leonard's lists: the C&E database contains (1) substantial additional information about each patent, such as the fields showing which family members have been declared essential, which can be used to increase the reliability of an analysis of the portfolios of particular parties; and (2) an essentiality analysis, which reports not just the essentiality determination but the claim that was found essential and the analyst's comments on that claim. This information, which Dr. Leonard's lists do not contain, makes it easier to audit either the inclusion of a patent on the list or the essentiality determination. Such information is, in my view, critical if one seeks to have an accurate understanding of the essential patent portfolios of individual patent holders, or the essential patent landscape more generally.

As just one example of why this is so, recall that, as I explain above, the essentiality analysis that was performed for the C&E database screened out non-LTE patents, such as the encryption patent indicated as declared because of a typo. This screening proceeded in two steps. First, some patents were immediately detected as being "not relevant." I examined the database and found that 803 patents (not all of them U.S. patents) were classified as not relevant to LTE. Second, analysis of the essentiality of a claim screened out patents that on the surface appear plausibly related to wireless but that were incorporated into the database by mistake. Using these steps, essentiality analysis screened out, for example, the patent US8180048—a patent that was marked as declared as essential to LTE because of a typo. It is a patent for a digital encryption algorithm; consequently, it is quite plausible, at least on the surface, that it is an LTE SEP. But, the claims contain elements that clearly are not in the 3GPP standards to which the patent was shown as being essential. No similar process screened that patent out of LeonardLTE\_US, and hence it was included in Dr. Leonard's patent counts.

This point cannot be overemphasized—the essentiality analysis provides a strong check that the patents found to be essential are relevant to the associated standard. The number of patent families found to be essential is highly likely to be a far more reliable indicator of the strength of a firm's patent portfolio than is the simple count of declared families found in LeonardLTE\_US or LTE\_H\_W.

### 3 “True” LTE Patents

Dr. Leonard appears to hold the opinion that LTE patents with priority dates earlier than 1/1/2009 are systematically more valuable than patents with later priority dates.<sup>21</sup> He bases this view on the supposed fact that such patents are more likely to be essential to Release 8—the first 3GPP release that included LTE.

For example, Dr. Leonard states,

Fourth, Unwired Planet claimed that its patents represented core functionality in the LTE standard for handsets<sup>142</sup>, though I note that the license itself covers additional patents beyond the specific Unwired Planet patents-in-suit.

<sup>142</sup> Unwired Planet claimed its patents represented “core functionality” of the LTE standard and argued that its patents were “True LTE SEPs.” Approved Judgment, *Unwired Planet v. Huawei*, April 5, 2017, at 278. I find that Samsung’s five asserted patents—USRE44105, US8619726, US8761130, US8509350, US9288825—are similar to the five claimed SEPs asserted by Unwired Planet—EP2229744, EP2119287, EP2485514, EP1230818, EP1105991. Specifically, I observe that Samsung’s asserted patents meet the criteria for **True LTE SEPs**: they are all (1) declared on the ETSI IPR database, (2) LTE patents, (3) members of “live” families, and (4) patents with priority dates prior to 1/1/2009. (emphasis added).<sup>22</sup>

It is true that a feature that is essential to Release 8 compliant equipment is also highly likely to be essential to Release 12 compliant equipment given the typical requirement of backward compatibility. Though it is possible such features exist, I am not aware of any features that have been dropped from the LTE standard over the progression from Release 8 to Release 12.<sup>23</sup>

On the other hand, Release 9 included features that are indispensable for voice calls—for example, the ability to call 911 and location capabilities such as GPS (needed to meet the Federal Communication Commission’s [FCC] legal requirements for E911 service). These Release 9 features are necessary in any device that is used for voice calls.<sup>24</sup> Given these regulatory requirements, the related Release 9 features are as much “core features” or “true LTE” as are

<sup>21</sup> See Leonard at ¶ 105 and footnote 142.

<sup>22</sup> Ibid

<sup>23</sup> However, I am aware of features removed from UMTS and of features that are now rarely used.

<sup>24</sup> See <https://www.fcc.gov/general/9-1-1-and-e9-1-1-services> for an overview of the relevant FCC rules. Those rules are set forth at 47 CFR 20.18 (911 Service).

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Before beginning that detailed analysis, let me provide some context. In my opening report, I discussed the use of contributions—more correctly, of “approved contributions”—as a tool for understanding the strength of a firm’s SEP portfolio. I characterized the 3GPP standards development process as “the collaborative design of the key elements of advanced wireless systems by the joint efforts of the world’s large telecommunications equipment design and manufacturing firms.”<sup>48</sup> This is not just my view of the process. A March 2018 press release from Samsung described the process similarly saying,

The 3GPP is a collaborative project aimed at developing global standards for acceptable specifications of telecommunications networks.<sup>49</sup>

Approved contributions are the building blocks that are assembled to create the overall design of the 3GPP standards. They are, figuratively speaking, blueprints for the wireless system.

Baron and Gupta describe this process saying,

Technical contributions are the unique technical solutions to problems the technical challenges that an SSO faces. Many of these solutions are patented, as an outcome of the R&D that led to these potential solutions.<sup>50</sup>

Each 3GPP standard is a compilation of approved contributions. Creating a contribution that becomes approved often involves designing a new capability or solving a previously unsolved problem. Such designs and solutions may also be patentable inventions. A Nokia patent illustrates this process. Nokia presented to TSG-RAN WG2 a proposed solution to a problem in packet data communication that had been identified earlier.<sup>51</sup> Figure 10 reproduces Figure 2 from that contribution. The minutes of that meeting show that the contribution was presented by Benoist Sebire from Nokia.<sup>52</sup>

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<sup>48</sup> Ibid at 87.

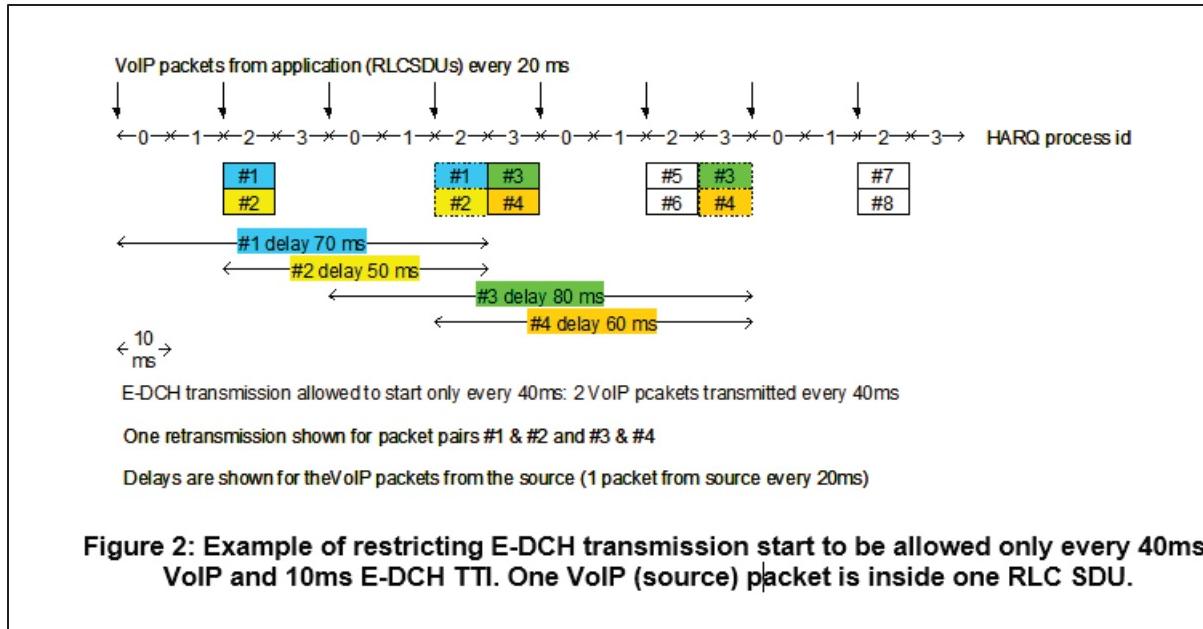
<sup>49</sup> *Samsung Research Director Elected as New Chairman of 3GPP Working Group*, (Samsung Press Release, March 22, 2018), at 2. Retrieved from <https://news.samsung.com/global/samsung-research-institute-director-mr-suresh-chitturi-elected-as-new-chairman-of-3gpp-sa6-working-group>

<sup>50</sup> Baron, J., & Gupta, K. (2018). Unpacking 3GPP standards. *Journal of Economics and Management Strategy*. Advance online publication. (HW\_Samsung\_00864590 – HW\_Samsung\_00864642) at 39. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3119112](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3119112)

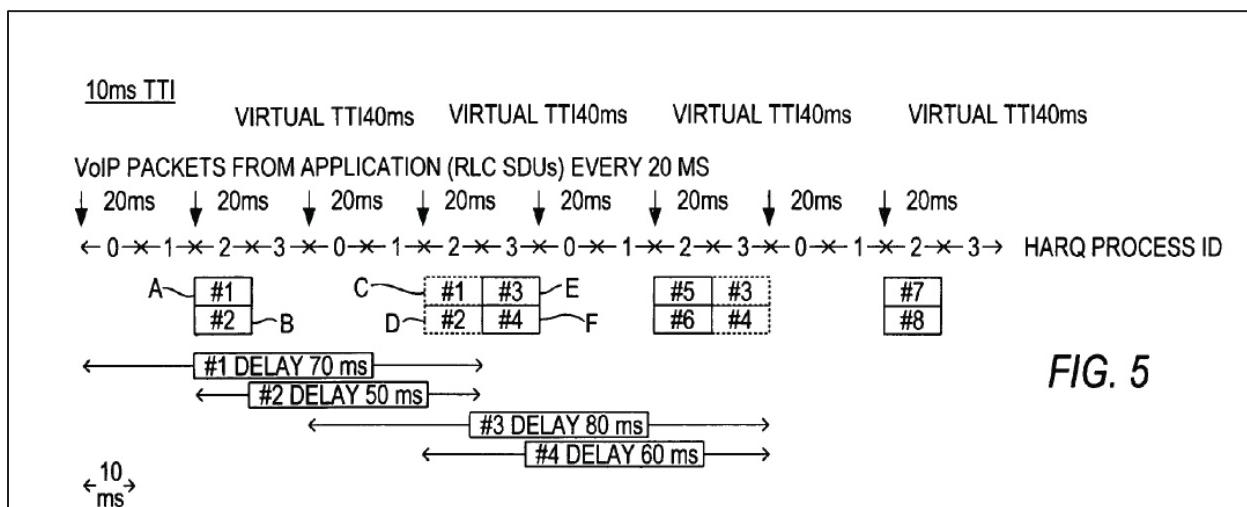
<sup>51</sup> R2-060335. *Continuous Connectivity Impact to MAC*, 3GPP TSG-RAN WG2 Meeting #51 (February 13-17, 2006).

<sup>52</sup> Draft Minutes RAN2-51, at p. 58. Retrieved from [http://www.3gpp.org/ftp/tsg\\_ran/WG2\\_RL2/TSGR2\\_51/Report/](http://www.3gpp.org/ftp/tsg_ran/WG2_RL2/TSGR2_51/Report/)

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**Figure 10. Figure 2 from Nokia Contribution to 3GPP TSG-RAN WG2**

A few months earlier, five Nokia engineers had filed a patent application for the invention described in the contribution. Figure 11 shows Figure 5 in the U.S. patent that resulted from that application. Notice that this figure is almost identical to the figure in the contribution. The first named inventor on the patent is Benoist Sebire—the Nokia engineer who presented the contribution at the working group meeting.

**Figure 11. Figure 5 from U.S. 7,804,850**

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In this case the contribution was “noted” rather than accepted. But, the concept stayed alive in the 3GPP process and was ultimately incorporated into the standard.<sup>53</sup>

I now turn to Dr. Leonard’s specific criticisms of contribution analysis.

#### **4.1 Dr. Leonard’s Assertion: Contributions do not measure the “true value of patented technology.”**

This is an obfuscating observation. Accepted contributions are a measure of the research and development effort directly related to the standard. Moreover, in many cases, accepted contributions have been assessed by qualified peers as appropriate for incorporation into the standard. A count of accepted contributions is not a direct measure of value. However, approved contributions are strong indicators regarding a firm’s investment in relevant and successful R&D and its creation of useful design features that have made it into the standard.

Other measures of the relevant R&D effort are available. A Samsung response to interrogatories states that Samsung spends slightly more than [REDACTED] per year in R&D related to [REDACTED]

[REDACTED] Samsung has [REDACTED] such employees (that total includes [REDACTED] consultants). Thus, Huawei’s relevant R&D expenditures are [REDACTED]

<sup>53</sup> Other examples of contributions and corresponding patents are given by U.S Patent 9,843,996 and 3GPP Tdoc R2-133440 and U.S Patent 8,112,093 and 3GPP Tdoc R2-051203.

<sup>54</sup> Samsung’s Objections & Responses to Huawei’s Fourth Set of Interrogatories 26, at 5 line 24 shows “Samsung’s annual budgets and average number of employees at DMC R&D Center who were involved in 3GPP cellular standards” in 2017 to be [REDACTED] and [REDACTED] employees and consultants. Using an exchange rate of [REDACTED], (found on Bloomberg.com on May 19, 2018)), this is equivalent to [REDACTED]

<sup>55</sup> [REDACTED]

<sup>56</sup> The Signals Research database (HW\_Samsung\_00681608) shows Huawei with 7,670 approved contributions and Samsung with 1,593. (Tab: All\_APV at C3 and C9).  $7,760/1,593 = 4.8$ .

#### **4.2 Dr. Leonard's Assertion: There is no empirical link between contributions and economic value of an SEP portfolio.**

There is an old saying, “Absence of evidence is not evidence of absence.” The view that there is a link between the number of contributions a firm has made to a standard and the number of SEPs the firm holds is a common-sense view.

A statement in one of the Thomson Reuters study presentations done for Samsung shows an empirical link between contributions and economic value. The Thomson Reuters presentation states,

As expected, most companies have high correlation of their technical contributions with their 'A' rated patents / applications.<sup>57</sup>

A statement in the Taiwan Year 103 Report also provides support for that view:

However, for most manufacturers, their number of major standards proposals has a clear relevance with their number of SEPs (relevance scores as high as 0.52). For example, Broadcom, Samsung, Nokia, Ericsson, and Huawei are all manufacturers with high proposal and SEP counts.<sup>58</sup>

There are some closely related empirical results that confirm the linkage. Kang and Kazuyuki analyzed the relationship between declared SEPs and several factors. One factor they considered was an inventor’s involvement in the standardization process. They concluded:

The regression analysis proved that inventors’ involvement in the standardization process as meeting attendees is the most important factor in obtaining essential IPRs.<sup>59</sup>

Approved contributions are a measure of the value, as judged by informed peers, of the output of from the R&D that led to both contributions and related patents. The Kang and Bekkers paper

<sup>57</sup> (SAMSUNG-HNDCA-000116788 – SAMSUNG-HNDCA-000116842, at 3-4. An A rating is defined earlier in that presentation as “‘A’: The patent is believed to be highly relevant / essential to the LIE standards.”)

<sup>58</sup> See Year 103 Communications Industry Patent Trends and Patent Litigation Analysis Research, National Applied Research Laboratories Report, 2014 at p. 125.

<sup>59</sup> Kang, B., & Kazuyuki, M. (2012). *Determinants of essential intellectual property rights for wireless communications standards: Manufacturing firms vs. non-manufacturing patentees* (RIETI Discussion Paper Series 12-E-042), at p. 37. Retrieved from <https://www.rieti.go.jp/en/publications/summary/12060011.html>

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that I discuss below also shows that inventors participating in the standards process appear to file more valuable SEPs than do others.

#### **4.3 Dr. Leonard's Assertion: A firm's ability to get patents incorporated into a standard is not a measure of patent value.**

Dr. Leonard's assertion seems to overlook the process by which technologies are proposed and adopted within 3GPP working groups, which is designed to ensure that valuable technologies are incorporated through a consensus-driven process.

In 3GPP, the vast majority of contributions are approved by consensus. If a vote is required, a supermajority, 71% or more, is needed for the contribution to be accepted. It may be that in some standards development organizations, favoritism and logrolling are important components of the process, but evidence shows that 3GPP is not such an organization. Samsung's inventor and designated witness Dr. Jianzhong Zhang testified that the 3GPP process for approving a technical contribution was based on technical merit, not on favoritism, logrolling, or concerns about patents:

So that work is basically we invent new technology. And then based on these technology, we write 3GPP contributions and go to the meeting to represent these contributions.<sup>60</sup>

Here is my understanding of how 3GPP RAN1 process works: It is a consensus-based process. So documents are contributed to the forum and if the chairman is willing, this can be brought up for the group to discuss. An agreement is made only when there is no sustained objection, and then we call it consensus;<sup>61</sup>

Yes. The way we think we work as delegates and through 3GPP meetings is you go there you share your contributions and discuss with other colleagues from other companies about these contributions and find a way to come to a conclusion or consensus based on all the contributions and discussions that we see. So from that point of view, yes, we worked together;<sup>62</sup>

When we go to the meetings at least in my understanding our focus is on technical discussions. And these are the conventions that myself the delegates from my company and other companies all sort of comply to, so we focus on the technical merits of the

<sup>60</sup> Deposition transcript of Jianzhong Zhang, October 27, 2017, *Huawei Technologies Co., Ltd., et al. v. Samsung Electronics Co., Ltd.* at 161:19-22.

<sup>61</sup> Ibid at 99:19-25.

<sup>62</sup> Ibid at 196:18-25.

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discussion. We try to work with others to sort of find a consensus group decision. So that's what we do;<sup>63</sup>

In about 2008, 3GPP adopted a new policy, one designed to permit progress when a minority objects to a proposed course of action.<sup>64</sup> Under that new policy, 3GPP allows a chairman to make a tentative decision on an issue when a consensus cannot be reached. Such tentative agreements are called *working agreements*. Working agreements are posted on the 3GPP website and can be challenged by parties who object to the working agreement. Such objections are resolved by a vote requiring a 71% majority. Each individual member (firm) gets one vote, so a firm cannot shift a vote in its favor by sending many representatives to a meeting.<sup>65</sup> The 3GPP website lists only 22 working agreements that have been created between October 2008 and March 2018.<sup>66</sup> Most of these were unchallenged; only two of them were put to a vote, and both of those were confirmed. Twenty-two is a tiny fraction of the tens of thousands of contributions that were approved between October 2008 and March 2018.<sup>67</sup> Clearly, the vast majority of 3GPP decisions are made by consensus.

Given a choice between two alternative proposals for a specific design problem, most participants have strong incentives to favor the better-performing alternative. Service providers such as AT&T and Verizon benefit from systems that deliver more valuable features and cost

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<sup>63</sup> Ibid at 206:20-207:2. See also Deposition transcript of Gert-Jans Van Lieshout Tr. December 12, 2017, *Huawei Technologies Co. Ltd. et al. v. Samsung Electronics Co. Ltd.* at 48:23-49:8, 84:23-85:23. Samsung inventor and former 3GPP RAN2 Chairman testifies that acceptance of a contribution by 3GPP companies shows that the contribution “defines a sufficient solution...because otherwise it wouldn’t have been selected as the solution in the standard”).

<sup>64</sup> See 3GPP Global Initiative – TSG *Working Agreements*. Retrieved from <http://www.3gpp.org/specifications-groups/32-tsg-working-agreements>

<sup>65</sup> See Article 26: TSG and WG voting during a meeting and Article 27: TSG or WG voting by correspondence. Retrieved from [http://www.3gpp.org/ftp/Information/Working\\_Procedures/3GPP\\_WP.htm#Article\\_26](http://www.3gpp.org/ftp/Information/Working_Procedures/3GPP_WP.htm#Article_26). Note that a single firm may have multiple subsidiaries that are individual members. For example, 15 Samsung entities (e.g., Beijing Samsung Telecom R&D) and 10 Huawei entities (e.g., Huawei Technologies France) were eligible to vote in TSG CT WG 1 meeting #111. A total of 178 members had the right to vote. See Voting list for TSG CT WG 1 meeting #111. Retrieved from [http://www.3gpp.org/ftp/webExtensions/elections/CT/CT1/Election\\_May\\_2018/votingList\\_CT1\\_mtg-111.htm](http://www.3gpp.org/ftp/webExtensions/elections/CT/CT1/Election_May_2018/votingList_CT1_mtg-111.htm).

<sup>66</sup> <http://www.3gpp.org/specifications-groups/working-agreements>

<sup>67</sup> The Signals Research Database (HW\_Samsung\_00681608) shows 39,906 contributions approved in 2009-2016. (Tab: All\_APV, AI310:AP310).

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less. Manufacturers such as Apple and LG benefit if wireless systems deliver more value to consumers—thereby making cell phones more valuable.<sup>68</sup>

Empirical support for the proposition that large firms are not favored in the 3GPP process is given by Gupta.<sup>69</sup> Gupta found that 15% of the participants in the 3GPP process are either startups or small-to-medium sized entities (SMEs).<sup>70</sup> She also found that 34% of contributions by startups and SMEs were accepted. This rate contrasts favorably with the 29% rate for other contributors and the 30% rate for the top 10 contributors.<sup>71</sup> This is strong evidence that manipulation of the process (e.g., logrolling) by the largest contributors is unlikely to be a significant factor in 3GPP. Startups and SMEs have little to offer others in return for getting those others to support their proposals.

Gupta also stated,

It is straight forward to assume that these contributions form the basis of the underlying Intellectual Property (IP) that then becomes potentially essential to the implementation of the standard (or the patents referred to as Standard Essential Patents (SEPs)).<sup>72</sup>

and

Put simply, technology contributions to standards are often patented.<sup>73</sup>

Elsewhere, Gupta and her coauthor Baron also stated,

An aspect of standardization that has motivated an important and growing body of economic analysis is the fact that some standards can only be implemented using patented technologies. Data on SEPs, discussed in detail in a related article (Baron and Pohlmann, 2018), can be related to technical contributions, which are covered by the data described in this paper. Technical contributions are the unique technical solutions to problems the technical challenges that an SSO faces. Many of these

<sup>68</sup> Some participants, such as test equipment manufacturers, appear to me to have little corporate incentive to favor superior alternatives. Still, engineering norms of efficiency and quality would often result in such firms supporting the superior alternative.

<sup>69</sup> Gupta, K. (2017). *The role of SMEs and startups in standards development*. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3001513](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3001513)

<sup>70</sup> Ibid at p. 5.

<sup>71</sup> Ibid at p. 7.

<sup>72</sup> Ibid at p. 6.

<sup>73</sup> Ibid at p. 9. Dr. Gupta is an economist. Earlier in her career, she was a wireless engineer and participated in 3GPP.

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solutions are patented, as an outcome of the R&D that led to these potential solutions.<sup>74</sup>

It may be that in some standards development organizations, favoritism and logrolling are important components of the process. However, given (1) the strong emphasis on consensus, (2) the large number of voting entities, and (3) the one-firm, one-vote rule together with the empirical evidence that contributions from startups and SMEs are accepted as readily as contributions from the largest firms, it appears unlikely that such favoritism is a major factor in the approval of contributions within the 3GPP working groups that are relevant to this litigation. Rather, it appears that technical merit, as judged by informed peers in the industry, is the key factor in the approval of contributions. Such technical merit is related to the value of the ideas, including any patentable inventions, in the contribution, because the contribution has solved a problem or advanced the state of the art, to help meet 3GPP's ambitious goals for development of the standard as a whole.<sup>75</sup>

In paragraph 185 of his report, Dr. Leonard states that patents that are incorporated into a standard as a result of a company's influence and involvement in the standardization process are "actually less valuable, on average."<sup>76</sup> In support of this proposition, he cites a paper by Kang and Bekkers. However, his assertion misstates their conclusion. Kang and Bekkers conclude that a subset of SEPs—those patents applied for in the week before a meeting of a standards working group in which the inventor participated—are less valuable than other SEPs. I did not find in that paper any discussion of the fraction of all SEPs that are such "just-in-time" patents.<sup>77</sup> However, the information in that paper's Table 2 allows one to calculate that fraction. A total of 1,856 SEPs were considered. Of these, 326 (18%) were applied for in the week before a meeting at which the inventor was present. Assuming, for purposes of argument, that Kang and Bekkers's conclusion is correct, then about one-fifth of SEPs fall into this category of less-

<sup>74</sup> Baron, J., & Gupta, K. (2018). Unpacking 3GPP standards. *Journal of Economics and Management Strategy*. Advance online publication. (HW\_Samsung\_00864590 – HW\_Samsung\_00864642) at 39. Retrieved from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3119112](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3119112)

<sup>75</sup> For example, Peak data rates have increased from about one megabit per second 15 years ago to a thousand times that—one gigabit per second—today.

<sup>76</sup> Leonard Opening Report at ¶ 185.

<sup>77</sup> Dr. Leonard does not provide any opinion or data suggesting that Huawei or Samsung follows such a practice.

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valuable SEPs.<sup>78</sup> However, there is an offsetting fact. Their Figure 3 shows that the value criterion they use—relative citation count—is higher for participant-inventors than for non-participant-inventors.<sup>79</sup> Their fundamental conclusion could be restated as follows: “Patents applied for by meeting participants in the week before a working-group meeting are better, on average, than those applied for by nonparticipants at any time but not as good as those applied for by meeting participants at other times.” That is, Kang and Bekkers show that patents applied for by meeting participants more than a week before a meeting are the most valuable SEPs, the subset of patents applied for by meeting participants in the week before a working-group meeting are second most valuable, and those applied for by participants during the meeting come in third; patents by non-contributors trail all categories of patents by participants. Table 2 of Kang and Bekkers also shows that only one-third of the SEP patents applied for by meeting participants are applied for during the week before a meeting.

Careful reading of Kang and Bekkers’s paper supports the view that contributions measure a firm’s input of valuable ideas and inventions into a 3GPP standard, and that a company’s involvement in the standardization process results on average in more valuable patents, contrary to Dr. Leonard’s claim.

#### **4.4 Dr. Leonard’s Assertion: A patent for a valuable technology may arise outside the standards development process.**

Of course, the above assertion is true as a general matter. But, it does not address the main point—that contributions are a reasonable measure of a firm’s investment of time and money into the design process that creates 3GPP standards, and which will likely result in patented technologies.

Dr. Leonard uses the example of Qualcomm CDMA patents that were essential to WCDMA as an example of a technology that arose outside the standards development process. But in my view this is special case that does not represent the actual processes at 3GPP. The early

<sup>78</sup> There is substantial reason to doubt that Kang and Bekkers’s conclusion is particularly robust or that it applies to Huawei.

<sup>79</sup> This is true for all time periods. Participant-inventors at their worst (the week before a meeting) are better than others at their best.

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development of the WCDMA 3G standard took place in ETSI before the formation of 3GPP. Participation was limited to European firms. It would not be unfair to describe the early evolution of the WCDMA standard at ETSI as an attempt to design a CDMA system that worked around Qualcomm's patents.

Bekkers characterizes the dispute over the standard saying,

December 10, 1998: Qualcomm rejects the proposal of Ericsson to lower the chip rate of WCDMA to 3.84 Mchip/s and demands that the WCDMA chip rate be brought down further to 3.6864 Mchip/s (the chip rate of cdma2000). It claims that technically the UMTS standard is not very different from the cdma2000 standard, but that the parameters are intentionally chosen in such a way that it is incompatible with the cdmaOne and cdma2000 standards. The CDMA Development Group (CDG) rejects Ericsson's proposal too, stating again that a chip rate has been chosen that is purposely incompatible with cdma2000.<sup>80</sup>

Mock describes Qualcomm's attempt to participate at ETSI as follows:

With parallel efforts to develop next generation code-based wireless standards going on in different regions of the world, Qualcomm attempted to participate in some of the European meetings coordinated through the European Telecommunications Standards Institute (ETSI). But Qualcomm quickly found it rather difficult to participate to any meaningful degree, as ETSI stipulated that only European companies could participate. To get around this exclusion, Qualcomm opened a European subsidiary with the expressed purpose of having a voice in the technology it pioneered and knew so much about. But the voice was a very small one—European revenue determined the number of votes a participant in ETSI was allowed. Since GSM dominated the EU, Qualcomm's European revenue was effectively zero. Having only one vote, Qualcomm held no power compared with other companies such as Ericsson, which had more than sixty-five votes<sup>81</sup>

Thus, Qualcomm's problem arose from the fact that European industry then wanted to exclude Qualcomm from the standards development process and, as much as possible, from the global market for 3G wireless. This exclusion was supported by European governments. In December 1998, Secretary of State Madeleine Albright, U.S. Trade Representative Charlene Barshefsky, Secretary of Commerce William Daley, and FCC Chairman William Kennard sent a letter to

<sup>80</sup> Beckers, R. (2001). *Mobile telecommunications standards GSM, UMTS, TETRA, and ERMES*. Norwood, MA: Artech House, at p. 579.

<sup>81</sup> Mock, D. (2005). *The Qualcomm Equation: How a fledgling telecom company forged a new path to big profits and market dominance*. New York, NY: AMACOM, at pp. 203–204.

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European Commission Commissioner Martin Bangemann expressing concern that there was an attempt in Europe to promote a particular European-developed 3G standard to the exclusion of other technologies.<sup>82</sup> The fact that senior officials of the federal government sent such a letter shows how important this trade dispute had become.

The European attempt to engineer around the Qualcomm patents failed. Despite the efforts at ETSI to work around them, those patents were WCDMA SEPs. Were Qualcomm allowed to more fully participate in the standardization, its patents likely would have been declared to the standard via corresponding contributions. Therefore, the case of Qualcomm and ETSI/WCDMA is unique; it does not weaken the proposition that contributions to 3GPP in recent years, related to LTE, are a reasonable measure of the relevance of a firm's patent portfolio to 3GPP standards including LTE. Indeed, the standards development process in 3GPP is and has been since 3GPP's inception designed to avoid the problems that Qualcomm encountered 20 years ago under the then-governing procedures at ETSI.<sup>83</sup>

#### **4.5 Dr. Leonard's Assertion: Relying on contributions is flawed because contributions are not tied to specific patents in the portfolio.**

Asserting that a source of information about a portfolio index is flawed because it is not tied to specific elements of the portfolio is like asserting that judging the quality of a college basketball team by whether it plays in the NCAA tournament is flawed because it is not tied to specific players on the team. Dr. Leonard's assertion is not logical.

Dr. Leonard states,

“Contributions” may reflect minor changes rather than substantial technical improvements to a standard.<sup>84</sup>

Of course, it is true that some contributions are minor—a contribution may consist of a variety of small changes to a standard. But, other contributions describe fundamental design concepts that

<sup>82</sup> See U.S. Department of State, Office of the Spokesman, Press Statement, *United States Presses Europe To Adopt Fair Standards For Wireless Communications*, December 22, 1998.

<sup>83</sup> 3GPP came in to being in December 1998 and took over the development of a 3G standard from ETSI. The 3GPP process is open to participants from around the globe. 3GPP rules try to ensure corporate and geographic diversity in the leadership of 3GPP.

<sup>84</sup> Leonard Opening Report at ¶ 187.

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are incorporated into the standard. There is no reason to think that the proportion of Huawei's contributions that are minor differs from the proportion for other firms. One of the strongest pieces of evidence supporting the value of contributions is the fact that the 3GPP standards exist. Those standards are the combined result of tens of thousands of contributions and thousands of new technologies (many patented) and design elements which were incorporated into the standard via contributions.

Dr. Leonard characterizes change requests (CRs) as "used to correct previous 'contributions.'"<sup>85</sup>

However, the material he cites, the 2010 Signals Research report, does not refer to change requests or CRs. It does refer to "editorial contributions." The Signals Research database, which was prepared some years later than that report, categorizes "Editorial Documents" in the "Non-Relevant Category" along with Administrative, Withdrawn, Rejected, and several other types of documents.<sup>86</sup> Thus, the count of approved contributions in the Signals Research database excludes contributions that are merely editorial in nature, which sufficiently addresses Dr. Leonard's criticism.

Dr. Leonard's characterization of CRs as edits to previous contributions is also incorrect. 3GPP describes CRs on their website.<sup>87</sup> That description begins with a summary,

The Change Request (CR) procedure is used by 3GPP to create revised versions of 3GPP specifications after their initial approval. The three main reasons why a change might be required are to:

- Add a new feature<sup>88</sup>
- Correct / clarify / enhance an existing feature of a Release still under development
- Correct an error in a spec which is functionally frozen<sup>89</sup>

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<sup>85</sup> Leonard Report at ¶ 187.

<sup>86</sup> Signals Research Database (HW\_Samsung\_00681608) (Tab: Info at lines 59–69).

<sup>87</sup> See <http://www.3gpp.org/specifications/change-requests>, 3GPP TR 21.900.

<sup>88</sup> The Samsung patent cited below as an example of a patent that can be identified with specific contribution was contributed by Samsung in a CR.

<sup>89</sup> <http://www.3gpp.org/specifications/change-requests>, at 1.

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The first reason given for creating a CR is “add a new feature” and the second reason includes “enhance an existing feature.” CRs modify standards that have been approved; they are not editorial changes to other contributions, as Dr. Leonard suggests.<sup>90</sup> CRs can be tied to patents. For instance, in a litigation against Apple, Samsung asserted a patent that it stated was based on a change request submitted to 3GPP.<sup>91</sup>

Dr. Leonard also notes that contributions may be submitted by multiple parties and asserts that this means that a contribution associated with one firm may contain inventions from other firms.

Dr. Leonard offers no estimate of how many such inventions are incorporated into the standard.

I understand that it is typical that the initial source of a contribution is the firm listed first if firms jointly sponsor a contribution. Signals Research informed us that the contribution count in their database is based on the first firm listed. Thus, Dr. Leonard’s criticism does not appear likely to have a significant impact.

Characterizing the use of contributions analysis as “flawed” rather than as “one factor to consider in assessing the value of a patent portfolio” is misleading. The reality is that the number of accepted contributions provides useful information regarding the likely value of a firm’s portfolio of SEPs.

Dr. Leonard also refers to criticisms of contribution analysis in *TCL v. Ericsson*.<sup>92</sup> The text he quotes points to two specific flaws with contribution analysis: (1) the fact that the number of contributions remains unchanged even if a firm sells much of its patent portfolio and (2) contribution counting would allow demanding royalties after patents had expired.

Note that these appear to be objections to the use of contribution analysis alone as the basis for valuing a portfolio. The first objection can be overcome by taking transferred patents into account, and the second can be overcome by taking expired patents into account.<sup>93</sup> Or,

<sup>90</sup> A standard is supposed to be at least 80% complete before it can be approved. See <http://www.3gpp.org/specifications/releases/20-specifications>.

<sup>91</sup> See May 16, 2014 Samsung v. Apple Japanese court judgment at p. 119-20, Section (B) “Background of the FRAND Declaration,” parts a. and b (HW\_Samsung\_00860290 – HW\_Samsung\_00860441).

<sup>92</sup> Leonard Opening Report at ¶ 188.

<sup>93</sup> It seems unlikely that there are many expired 3GPP SEPs in Huawei’s portfolio. A large majority of Huawei contributions were made in 2006 or later. If a relevant patent has a priority date close to the time that a corresponding contribution were made, it will be several years before it reaches the end of their lifetime.

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alternatively, contributions can be used merely as a means to appropriately weigh the significance of other portfolio assessment metrics—such as deemed essential patent counts—as I understand Mr. Lasinski does in his opening report in this matter.

#### **4.6 Concluding Thoughts on Contributions**

Dr. Leonard quotes Signals Research as supporting the proposition that a company's activities in 3GPP do not provide useful information about the firm's patent portfolio. He states,

The “contributions” measure reflects a company’s influence on the standard setting process, but such influence may not be attributable to the value of the company’s SEP portfolio. For example, a study sponsored by Ericsson states: “While the results of such an exercise would not provide specific information about the ownership of essential LTE patents, the results would identify the companies most heavily involved in developing the standard.”<sup>94</sup>

Dr. Leonard fails to note that that study he cites endorses the use of contribution analysis to assess the strength of a firm's portfolio of SEP patents. The report he quotes also states,

Two things are certain. First, unlike patent-counting exercises which rely upon a company's self-proclamations to determine how many essential patents it has, this approach relies on an independent source – the 3GPP working groups – to determine what has and what has not been incorporated into the LTE standard and who should get credit for the contribution. Second, this approach doesn't include predictions of which documents (e.g., patent declarations) actually get approved and published. Instead, it only counts documents (e.g., approved 3GPP submissions) after they have been approved by a company's peers.<sup>95</sup>

Therefore, although Dr. Leonard concludes that contributions analysis should not be used when trying to estimate the size or value of a firm's SEPs, in my view the failure to consider contributions analysis throws away useful information. As is recognized in the sources I have discussed above, as well as in my opening report, contributions analysis is a tool that can be used, along with others tools, to better understand the value of a patent portfolio.

---

<sup>94</sup> Leonard Opening Report at ¶ 183, footnote omitted.

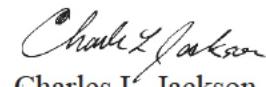
<sup>95</sup> “The Essentials of Intellectual Property—Quantifying Technology Leadership in the Development of the LTE Standard,” Signals Research Group, white paper paid and developed for Ericsson, September 2010, at 24. [https://www.ericsson.com/mx/res/docs/2010/101220\\_lte\\_contribution\\_whitepaper.pdf](https://www.ericsson.com/mx/res/docs/2010/101220_lte_contribution_whitepaper.pdf).

## 5 Conclusions

Above, I address three issues from Dr. Leonard's report. First, I examined Dr. Leonard's list of U.S. LTE patents and showed that it contains many expired or withdrawn patents and contains patents that are not LTE patents. I also observed that the essentiality analysis performed to create the C&E database considered only patents that had not expired and that the essentiality analysis screened out non-relevant patents, thus creating a superior and more robust database of information compared to the Leonard patent lists.

Second, I showed that, to the degree that Dr. Leonard believes that LTE patents that were issued at the same time as or before 3GPP Release 8, the first release of LTE, are more necessary or more vital to LTE than are later patents, he is incorrect. The law and market forces require modern LTE devices to implement capabilities defined in releases later than Release 8.

Third, I responded to Dr. Leonard's criticisms of the use of contributions analysis as part of the process of valuing a firm's patent portfolio. I showed that, in addition to the fact that common sense indicates that contributions analysis would be useful, (1) there is research and analysis that supports the use of contributions analysis, (2) one reference that Dr. Leonard cites in support of his view of contributions analysis contains a strong statement regarding the benefits of contributions analysis, and (3) careful reading of a second reference he cites in support of his view actually provides further support for contributions analysis. In addition to the review of such analysis I provide in my opening report, the discussion above further confirms my opinion that approved contribution analysis is a valuable tool for assessing SEP portfolio strength.



Charles L. Jackson

Port Tobacco, MD May 26, 2018

**EXHIBIT 12**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

References material marked HIGHLY CONFIDENTIAL

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION**

)  
HUAWEI TECHNOLOGIES CO., LTD., )  
HUAWEI DEVICE USA, INC., and )  
HUAWEI TECHNOLOGIES USA, INC., )  
)  
Plaintiff(s)/Counterclaim )  
Defendants, )  
)  
vs. )  
)  
SAMSUNG ELECTRONICS CO., LTD, )  
SAMSUNG ELECTRONICS AMERICA, )  
INC., ) Case Number: 3:16-cv-2787-WHO  
)  
Defendants / Counterclaim- )  
Plaintiffs, ) **References Discovery Material Marked  
“Highly Confidential - Attorneys’ Eyes  
Only”**  
and )  
SAMSUNG RESEARCH AMERICA, INC., )  
)  
Defendant, )  
)  
v. )  
)  
HISILICON TECHNOLOGIES CO., LTD., )  
)  
Counterclaim-Defendant. )  
\_\_\_\_\_  
)

**Supplemental Report of Dr. Charles L. Jackson  
Regarding the 3GPP Patent Landscape**

References material marked HIGHLY CONFIDENTIAL

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## 1 Introduction and Overview

I am the same Charles Jackson who provided an opening report in this matter on April 27, 2018 (“Jackson Opening Report”) and a rebuttal report on May 26, 2018 (“Jackson Rebuttal Report”). My background and biographical information is set forth in the Jackson Opening Report. I was asked to respond to that part of Dr. Leonard’s rebuttal report that addresses for the first time the use of citation analysis to value patent portfolios. This report contains that response.

## 2 Dr. Leonard’s Use of the Citation Analysis Literature

Dr. Leonard refers to eight publications as support for the use of citation analysis in assessing patent portfolio value. I provide a summary and excerpts of each publication in Exhibit 1. None of these publications supports Dr. Leonard’s use of citation analysis. For example:

- Fischer and Leidinger (2014) concluded that (1) forward citations “explain only a small variance in patent value,” of 0.5% to 1.2%; (2) “the explanatory power of forward citations is quite limited”; (3) previous research recognized a “noisy relationship between forward citations and patent value,” such as explaining variance by only 1.4%; and (4) the effect was studied in patents more than 5 years old.<sup>1</sup>
- Harhoff et al. (2003) used regression analysis to create a model that uses citation analysis as one of eight variables to predict patent value. Even with all eight variables, their model had a pseudo-R-squared of 0.139, which means that it explains little of the variation in the value of patents.
- Harhoff et al. (1999) performed a regression analysis of U.S. patents and found that “[t]he relatively low R<sup>2</sup> values for all regressions reveal that the citation-value relationship is quite noisy.”<sup>2</sup>
- Schankerman (1998) is a study of the value of French patents based on data about renewals. This paper provides no new data or insights on citations and patent value.
- Jaffe and Trajtenberg (2002) (which reprints Trajtenberg [1990]) relied on data in which (1) the few early patents related to CT-scan technology were heavily cited and (2) the value that was added by CT scanners was high in the early years and then declined. Given data with this structure, finding a high correlation between patents weighted by citations and value is to be expected. Perhaps the most important question regarding this study is the extent to which the pattern of invention and value over time are duplicated for other technologies and other industries. Few innovations in wireless have had the impact on the wireless industry that Hounsfield’s invention had on the CT industry. The structure underlying the Trajtenberg publication, which involved the pioneer patent on a

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<sup>1</sup> Fischer and Leidinger (2014) at pp. 519, 521, 527.

<sup>2</sup> Harhoff et al. (1999) at p. 4.

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Nobel prize-winning invention, is not present in the modern wireless industry, and therefore Trajtenberg's results are unlikely to apply to 3GPP standards-essential patents (SEPs).

- Breitzman and Thomas (2002) did not report any details on their regression model except that it had an  $R^2$  of 0.4291. Nothing in this paper supports a quantitative weighting of citations to assess patent value.
- Bekkers et al. (2014) note that the time pattern of citations to SEPs differs from that of non-SEPs, with the citation rate being lower for SEPs during the first 5 years after grant and higher in later years.<sup>3</sup> This publication does not provide any additional quantitative support for citation analysis as a means for valuing patents or patent portfolios.

### **3 Other Literature on Citation Analysis**

Several publications emphasize the fact that, although citations are correlated with patent value, that association is weak and citation counts are poor predictors of patent value. For example, Gambardella et al. (2008) state,

Our measure is significantly correlated with the number of patent citations, references, claims, and countries in which the patent is applied. Citations explain value as much as the other three indicators combined, and the right tail of citations is correlated with the right tail of our value measure. *Yet, the four indicators only explain 2.7% of the variance of patent value.*<sup>4</sup>

Likewise, Bessen states,

In no case did the portion of variance explained equal as much as 6%. In other words, as other researchers have also concluded, patent citation statistics are correlated with patent value, but they are very “noisy signals.” This analysis indicates just how noisy they are.<sup>5</sup> The fact that the regressions of the relationship between forward citation count and patent value estimated model coefficients that are statistically significant is no surprise, but it does not mean that these coefficients are necessarily significant in any practical sense. These regressions considered many patents. It is well-known that analysis of large data sets almost guarantees that the results will have statistical significance (small p-values). The American Statistical Association, the primary professional society for statisticians, recently released a statement on significance testing. They stated,

Statistical significance is not equivalent to scientific, human, or economic significance. Smaller p-values do not necessarily imply the presence of larger or more important effects, and larger p-values do not imply a lack of importance or even lack of effect. Any

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<sup>3</sup> Bekkers et al. (2014) at pp. 30–32.

<sup>4</sup> Gambardella et al. (2008) at p. 69. Emphasis added.

<sup>5</sup> Bessen (2008) at p. 941.

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effect, no matter how tiny, can produce a small p-value if the sample size or measurement precision is high enough, and large effects may produce unimpressive p-values if the sample size is small or measurements are imprecise.<sup>6</sup>

Moreover, underlying patterns regarding citations that have been identified by the analysis of U.S. patents filed by U.S. inventors may not apply to U.S. patents with Chinese or Korean inventors, let alone to a comparison of U.S. patents issued to Chinese inventors with U.S. patents issued to Korean inventors. National practice in filing patents and citing prior art varies. Chinese patents will be cited less than English-language patents due simply to the language barrier. One study showed enormous variation in the citing practices of U.S. patents across inventors of different nationalities.<sup>7</sup> For example, that study showed that the examiner added all citations in 61% of the 11,268 Korean-inventor patents studied and added 80% of the citations in the average Samsung patent.<sup>8</sup> In contrast, the examiner added all citations to only 27% of patents with inventors from Sweden. Extrapolating from a weak and flawed measure calibrated on one population to a different population is very questionable reasoning.

#### **4 Dr. Leonard's Use of Citation Analysis**

Dr. Leonard describes how he uses citation counts in Exhibit 4b of his report. In Exhibit 2, I quote Dr. Leonard's summary of his methodology and reconstruct his methodology, because Dr. Leonard does not provide a complete description of it in his report. On the basis of my review of Dr. Leonard's citation analysis, I believe it is profoundly flawed for several reasons.

First, the literature on citation analysis shows that citation analysis, even if properly done and with the right data available, can explain very little of the value of a patent portfolio. For instance, Bessen states that "In no case did the portion of variance explained equal as much as 6%."<sup>9</sup> The correlations observed in the literature are likely of little probative value because of (1) the nature of statistics performed on large data sets as I explained above and (2) the low R<sup>2</sup> values reported in these studies.

Second, Dr. Leonard failed to account for differences in filing and citing practices across jurisdictions. As noted above, one study showed enormous variation in the citing practices of U.S. patents across inventors of different nationalities, and language barriers almost guarantee

<sup>6</sup> Wasserstein, R. L., & Lazar, N. A. (2016) at p. 8

<sup>7</sup> Alcácer et al. (2008).

<sup>8</sup> Ibid at Table 1 and Table 5.

<sup>9</sup> Bessen (2008) at p. 941.

References material marked HIGHLY CONFIDENTIAL

differences in numbers of citations. I understand that Chinese patent law requires firms to file patent application in China first, before filing outside China, similar to some U.S. patent rules.<sup>10</sup> The Chinese patent application are filed in Chinese and understandably garner few citations because of a simple language barrier. Dr. Leonard makes no attempt to account for these regional differences.<sup>11</sup>

Third, Dr. Leonard's age-based normalization of citation counts appears to be flawed. It is not clear why Dr. Leonard uses the issue date of the oldest U.S. patent in the family rather than the date of the first publication of a family member or the first U.S. publication of a family member.<sup>12</sup> Moreover, Dr. Leonard's Table 5 shows that the average age of a Samsung U.S. Deemed 4G Handset patent was 3.8 years; for Huawei the average age was 4.16 years. Recall that Fischer and Leidinger's study was of patents more than 5 years old, so its results may not apply to these Huawei and Samsung patents. Recall also that Bekkers et al. (2014) noted that SEPs tend to be cited less in the first 5 years after issue than do non-SEP patents. Dr. Leonard does not discuss any implications of the age of the patents.

Fourth, Dr. Leonard appears to have miscounted citations. One example of this is given by Dr. Leonard's citation analysis of family 2362, which contains U.S. 8,416,892. His database shows this patent family as having no citations, but U.S. Patent No 8,295,266 cites U.S. 8,416,892's application (see Exhibit 3). Dr. Leonard's omission of such basic data shows that his analysis is incomplete and unreliable.

Fifth, Dr. Leonard's weighting formula is unsupportable. The argument for weighting families by the number of citations for that family is terribly flawed.<sup>13</sup> As just one example, the extra term that squares the number of families merely inflates the weight for firms with larger families. In effect, it is a form of double counting.

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<sup>10</sup> See <https://www.uspto.gov/web/offices/pac/mpep/s140.html>

<sup>11</sup> Also, Dr. Leonard makes no attempt to address the impact of the data limitations in the Concur IP database on his regional analysis. For instance, the regional deemed patent shares that Dr. Leonard calculates for Korea, Japan, Brazil, and Russia may be understated because families with issued patents in those countries but without an issued and active English or Chinese member were not included in the Concur IP essentiality analysis. See my Initial Report at Appendix C (Selection of patents for analysis).

<sup>12</sup> In the United States, patent applications are usually published 18 months after filing. See USPTO MPEP 1120. Patents are usually issued about 18 months later, but some patents take far longer to issue.

<sup>13</sup> See Exhibit 2, where I provide a fuller response to the mechanics of Dr. Leonard's analysis.

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Sixth, the way Dr. Leonard appears to have implemented his citation analysis does not even appear to be consistent with the scholarship he cites as the basis for his reliance on citations as a proxy for patent value. If families were weighted only by the number of citations for that family, then a family with no citations would be worth zero and a family with two citations would be worth twice as much as a family with one citation. Fischer and Leidinger (2014), the publication Dr. Leonard discusses in the body of his Rebuttal Report, showed a less-than-10% increase in value associated with an additional citation. In contrast to this small number, Dr. Leonard assumes that each citation adds enormous value.

Dr. Leonard's Table 5 shows that the average Samsung 4G handset patent has 0.41 age-adjusted citations (excluding self-citations); the corresponding average for Huawei is 0.15 citations. This is a difference of 0.26 citations, on average, per patent. If one assumes, for the sake of argument, that Dr. Leonard's citation counts are correct and that each additional citation makes a patent 10% more valuable, then the extra citations would make Samsung patents on average 2.6% more valuable than the corresponding Huawei patents. The appropriate relative weighting values would be 1.0 for Huawei and 1.026 for Samsung. These weights are wildly different from the weights used by Dr. Leonard, and this fundamental discrepancy shows that his calculations should be disregarded.

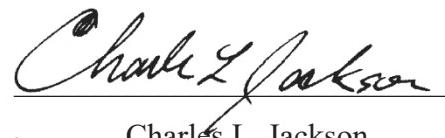
## 5 Conclusions

Based on the above, citation analysis appears to be, at least in part, an example of the *streetlight fallacy*—searching for lost keys where the light is good rather than searching near where one thinks one lost the keys. Citations are easy to measure. So, economists study citations even though citation counts have only a weak and uneven connection to patent value.

Given that (1) Dr. Leonard's count of citations is incorrect to an unknown, but probably non-trivial, degree; (2) his method of citation weighting does not correspond to that in the literature; (3) the literature has identified citation counting as a “noisy” and “quite limited” method of identifying patent value; and (4) Dr. Leonard has not established that citations of Chinese and Korean patents follow the patterns of the patents studied in the literature, Dr. Leonard's conclusions based on citation weighting should not be relied upon.

References material marked HIGHLY CONFIDENTIAL

Executed on this 11th day of June, 2018 in Washington, DC.



The image shows a handwritten signature in black ink, which appears to read "Charles L. Jackson". The signature is fluid and cursive, with a horizontal line drawn underneath it.

Charles L. Jackson

**EXHIBIT 13**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

**Giardina, David C.**

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**From:** Giardina, David C.  
**Sent:** Monday, June 11, 2018 2:17 PM  
**To:** Thomas Pease; Bettinger, Mike; Yang, Irene  
**Cc:** QE\_Huawei v. Samsung; Huawei-Samsung Sidley  
**Subject:** RE: Huawei/Samsung - Improper Rebuttal

Tom –

Having not heard from you, we plan to adhere to the schedule set forth below. We will serve the Jackson supplement later today. We will serve the Padilla and Lasinski supplemental reports tomorrow. We will adhere to the page limits previously discussed.

Best,  
Dave

**DAVID C. GIARDINA**

**SIDLEY AUSTIN LLP**  
+1 312 853 4155  
[dgiardina@sidley.com](mailto:dgiardina@sidley.com)

---

**From:** Giardina, David C.  
**Sent:** Monday, June 11, 2018 9:43 AM  
**To:** Thomas Pease <[thomaspease@quinnmanuel.com](mailto:thomaspease@quinnmanuel.com)>; Bettinger, Mike <[mbettinger@sidley.com](mailto:mbettinger@sidley.com)>; Yang, Irene <[irene.yang@sidley.com](mailto:irene.yang@sidley.com)>  
**Cc:** QE\_Huawei v. Samsung <[QE\\_Huaweiiv.Samsung@quinnmanuel.com](mailto:QE_Huaweiiv.Samsung@quinnmanuel.com)>; Huawei-Samsung Sidley <[Huawei-Samsung-Sidley@sidley.com](mailto:Huawei-Samsung-Sidley@sidley.com)>  
**Subject:** RE: Huawei/Samsung - Improper Rebuttal

Tom –

Can we close the loop on this?

Thanks,  
Dave

**DAVID C. GIARDINA**

**SIDLEY AUSTIN LLP**  
+1 312 853 4155  
[dgiardina@sidley.com](mailto:dgiardina@sidley.com)

---

**From:** Giardina, David C.  
**Sent:** Friday, June 08, 2018 5:56 PM

**To:** Thomas Pease <[thomaspease@quinnemanuel.com](mailto:thomaspease@quinnemanuel.com)>; Bettinger, Mike <[mbettinger@sidley.com](mailto:mbettinger@sidley.com)>; Yang, Irene <[irene.yang@sidley.com](mailto:irene.yang@sidley.com)>  
**Cc:** QE\_Huawei v. Samsung <[QE\\_Huaweiiv.Samsung@quinnemanuel.com](mailto:QE_Huaweiiv.Samsung@quinnemanuel.com)>; Huawei-Samsung Sidley <[Huawei-Samsung-Sidley@sidley.com](mailto:Huawei-Samsung-Sidley@sidley.com)>  
**Subject:** RE: Huawei/Samsung - Improper Rebuttal

Tom -

With the data received today, we believe we now have what our experts need to replicate Dr. Leonard's analysis. Given the delay in resolving that, we propose to serve the Lasinski and Padilla supplements by June 12. We will serve the Jackson supplement by June 11. Please confirm that is acceptable.

Thanks,  
Dave

Sent with BlackBerry Work  
([www.blackberry.com](http://www.blackberry.com))

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**From:** Thomas Pease <[thomaspease@quinnemanuel.com](mailto:thomaspease@quinnemanuel.com)>  
**Date:** Friday, Jun 08, 2018, 2:42 PM  
**To:** Giardina, David C. <[dgiardina@sidley.com](mailto:dgiardina@sidley.com)>, Bettinger, Mike <[mbettinger@sidley.com](mailto:mbettinger@sidley.com)>, Yang, Irene <[irene.yang@sidley.com](mailto:irene.yang@sidley.com)>  
**Cc:** QE\_Huawei v. Samsung <[QE\\_Huaweiiv.Samsung@quinnemanuel.com](mailto:QE_Huaweiiv.Samsung@quinnemanuel.com)>, Huawei-Samsung Sidley <[Huawei-Samsung-Sidley@sidley.com](mailto:Huawei-Samsung-Sidley@sidley.com)>  
**Subject:** RE: Huawei/Samsung - Improper Rebuttal

Dave,

We disagree about the alleged gaps in Dr. Leonard's citation analysis. Am I correct, though, that you now have the information you asked for?

Re the supplemental reports as per below, June 11 is fine. I take it with that change we are now in agreement with the proposal I made. If not, please let me know at once.

We are not in a position to confirm either of the Lasinski dates you proposed. We are trying to make them work, but haven't been able to do so, yet. We will keep you posted on that issue.

Best,

Tom

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**From:** Giardina, David C. [<mailto:dgiardina@sidley.com>]  
**Sent:** Friday, June 08, 2018 3:36 PM  
**To:** Thomas Pease <[thomaspease@quinnemanuel.com](mailto:thomaspease@quinnemanuel.com)>; Bettinger, Mike <[mbettinger@sidley.com](mailto:mbettinger@sidley.com)>; Yang, Irene <[irene.yang@sidley.com](mailto:irene.yang@sidley.com)>  
**Cc:** QE\_Huawei v. Samsung <[QE\\_Huaweiiv.Samsung@quinnemanuel.com](mailto:QE_Huaweiiv.Samsung@quinnemanuel.com)>; Huawei-Samsung Sidley <[Huawei-Samsung-Sidley@sidley.com](mailto:Huawei-Samsung-Sidley@sidley.com)>  
**Subject:** RE: Huawei/Samsung - Improper Rebuttal

Tom -

I wanted to follow up on this to see if we can reach an accommodation on this. Please let us know.

Thanks,  
Dave

Sent with BlackBerry Work  
([www.blackberry.com](http://www.blackberry.com))

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**From:** Giardina, David C. <[dgiardina@sidley.com](mailto:dgiardina@sidley.com)>  
**Date:** Wednesday, Jun 06, 2018, 8:28 PM  
**To:** Thomas Pease <[thomaspease@quinnmanuel.com](mailto:thomaspease@quinnmanuel.com)>, Bettinger, Mike <[mbettinger@sidley.com](mailto:mbettinger@sidley.com)>, Yang, Irene <[irene.yang@sidley.com](mailto:irene.yang@sidley.com)>  
**Cc:** QE\_Huawei v. Samsung <[QE\\_Huaweiiv.Samsung@quinnmanuel.com](mailto:QE_Huaweiiv.Samsung@quinnmanuel.com)>, Huawei-Samsung Sidley <[Huawei-Samsung-Sidley@sidley.com](mailto:Huawei-Samsung-Sidley@sidley.com)>  
**Subject:** RE: Huawei/Samsung - Improper Rebuttal

Tom –

Thanks for your message below. We agree to your proposal concerning the supplemental reports, with just a couple of slight proposed modifications. Because there continue to be gaps in the back-up to Dr. Leonard's citation analysis, on the assumption that those can be resolved today, we propose to serve the contemplated supplemental reports by June 11, rather than June 8.

As for Lasinski's deposition, it's not going to be possible to get it done the week of June 25. I believe we could do it on June 22, if the extra day relative to our original proposal of June 21, helps. Otherwise, we'd be looking at July 3 (assuming he's available that day, which I've not yet confirmed).

Best regards,  
Dave

DAVID GIARDINA  
SIDLEY AUSTIN LLP

Sent with BlackBerry Work  
([www.blackberry.com](http://www.blackberry.com))

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**From:** Thomas Pease <[thomaspease@quinnmanuel.com](mailto:thomaspease@quinnmanuel.com)>  
**Date:** Tuesday, Jun 05, 2018, 1:00 AM  
**To:** Giardina, David C. <[dgiardina@sidley.com](mailto:dgiardina@sidley.com)>, Bettinger, Mike <[mbettinger@sidley.com](mailto:mbettinger@sidley.com)>, Yang, Irene <[irene.yang@sidley.com](mailto:irene.yang@sidley.com)>  
**Cc:** QE\_Huawei v. Samsung <[QE\\_Huaweiiv.Samsung@quinnmanuel.com](mailto:QE_Huaweiiv.Samsung@quinnmanuel.com)>, Huawei-Samsung Sidley <[Huawei-Samsung-Sidley@sidley.com](mailto:Huawei-Samsung-Sidley@sidley.com)>  
**Subject:** Huawei/Samsung - Improper Rebuttal

Dear Dave,

This responds to your request to serve supplemental reports for Lasinski, Padilla and Jackson.

As I mentioned earlier, we disagree that there is anything improper about the arguments set forth in the Samsung expert rebuttal reports that you identified.

- Dr. Lasinski and Dr. Padilla set forth opinions on the parties' licenses (including on comparability) in their opening reports in support of Huawei's own breach of contract claim. Dr. Leonard and Prof. Hausman both rebut these opinions. Dr. Leonard's rebuttal analysis appears in a section of his report entitled "Mr. Lasinski's Comparable License Analysis is Fundamentally Flawed." It is clearly rebuttal evidence. Prof. Hausman, in turn, specifically rebuts Dr. Padilla's opening report assertion that "Huawei's conduct cannot be characterized as a refusal to license or as an attempt to obtain supra FRAND royalties." These are rebuttal arguments and it was entirely appropriate for Dr. Leonard and Prof. Hausman to include them in their rebuttal reports.
- The same is true for Dr. Leonard's reliance on citation analysis of the Huawei and Samsung portfolios. These opinions are set forth in the section of his rebuttal report that is entitled "If Mr. Lasinski Had Used Forward-Citations Instead of Contributions as an Indicator of Value, He Would Have Reached a Different Conclusion." Dr. Leonard is rebutting the positions that Dr. Lasinski offered based on "his unsupported contributions measure." This is appropriate rebuttal to the opinions that Huawei's expert offered.
- So, too, Dr. Leonard's analysis of Samsung's pre-suit offer to Huawei directly responds to Dr. Padilla's criticism of that offer. Again, this is proper rebuttal testimony.

Samsung and Huawei both have competing breach of contract claims and presumably have the right to present their affirmative and rebuttal cases in the manner they think is best.

That being said, you are correct that each party has the obligation, as a condition precedent, to establish that it complied with its FRAND obligations. It could, therefore, be confusing for the parties, as well as the jury and Court, if the parties maintain rigid distinctions on these overlapping claims and limit the evidence they present at various stages of the trial accordingly. For example, if Huawei were to go first in presenting evidence of its breach of contract claim (based on its opening reports), with Samsung then presenting its rebuttal case (based on its rebuttal reports) followed by its own breach of contract and antitrust claims (based on its opening reports), with Huawei then closing things out by rebutting those claims (based on Huawei's rebuttal reports), we suspect the jury and court may not be able to keep what evidence relates to which claim straight. We also suspect the parties may end up objecting as to the timing and limits of the evidence presented, which the Court will not like.

To remedy this, here is what we propose:

- Huawei may serve on or before June 8 supplemental reports for Lasinski (up to 20 pages); Padilla (up to 7 pages) and Jackson (up to 5 pages).
- Those reports will be limited to rebutting the alleged new arguments you identified in your email below and that I briefly addressed above.
- We'll work together to schedule Dr. Lasinski's deposition for a date on or after June 25 to ensure that Samsung has sufficient time to process the information set forth in his supplemental report.
- Samsung, at its option, will have until June 8 to serve an expert report that responds to the so-called "rebuttal" report of Jacques deLisle on Chinese law and procedure—issues that were not raised in Samsung's opening reports.
- At trial, Samsung shall be permitted to present evidence through Dr. Leonard and Prof. Hausman on Samsung's breach of contract and antitrust claims and in rebuttal to Huawei's breach of contract claims in any manner or sequence that Samsung's believes would best enable it to efficiently present evidence on these competing claims to the jury without regard to whether the opinions and underlying evidence were first set forth in an opening report or a

rebuttal report, as long as they were disclosed in one such report. Huawei, in turn, shall be permitted to present evidence through Dr. Lasinski, Dr. Padilla, and Dr. Jackson in the manner Huawei believes would best enable it to efficiently present evidence on these competing claims to the jury without regard to whether the opinions and underlying evidence were first set forth in an opening report, a rebuttal report, or a supplemental report, as long as they were disclosed in one such report.

- Huawei will not move to strike any aspect of the Leonard and Hausman rebuttal reports on the ground that they contain opinions or evidence that should have been set forth in an opening report.
- With the exception of the ground set forth in the bullet point immediately above, both parties reserve the right to seek to challenge any aspect of any expert's report on any ground.

We welcome your thoughts.

Best,

Tom

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**From:** Giardina, David C. [<mailto:dgiardina@sidley.com>]  
**Sent:** Friday, June 01, 2018 12:33 PM  
**To:** Thomas Pease <[thomaspease@quinnmanuel.com](mailto:thomaspease@quinnmanuel.com)>; Bettinger, Mike <[mbettinger@sidley.com](mailto:mbettinger@sidley.com)>; Yang, Irene <[irene.yang@sidley.com](mailto:irene.yang@sidley.com)>  
**Cc:** QE\_Huawei v. Samsung <[QE\\_Huaweiiv.Samsung@quinnmanuel.com](mailto:QE_Huaweiiv.Samsung@quinnmanuel.com)>; Huawei-Samsung Sidley <[Huawei-Samsung-Sidley@sidley.com](mailto:Huawei-Samsung-Sidley@sidley.com)>  
**Subject:** RE: Huawei/Samsung - Improper Rebuttal

Tom –

We would expect something like the following:

Lasinski – 15-20 pages  
Padilla – 5-7 pages  
Jackson – 5 pages

Assuming we get Leonard's natives today, we should be able to serve the supplemental reports by no later than June 8.

Best,  
Dave

**DAVID C. GIARDINA**

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**From:** Thomas Pease <[thomaspease@quinnmanuel.com](mailto:thomaspease@quinnmanuel.com)>  
**Sent:** Friday, June 01, 2018 9:28 AM  
**To:** Giardina, David C. <[dgiardina@sidley.com](mailto:dgiardina@sidley.com)>; Bettinger, Mike <[mbettinger@sidley.com](mailto:mbettinger@sidley.com)>;

Yang, Irene <[irene.yang@sidley.com](mailto:irene.yang@sidley.com)>  
Cc: QE\_Huawei v. Samsung <[QE\\_Huaweiiv.Samsung@quinnmanuel.com](mailto:QE_Huaweiiv.Samsung@quinnmanuel.com)>; Huawei-Samsung  
Sidley <[Huawei-Samsung-Sidley@sidley.com](mailto:Huawei-Samsung-Sidley@sidley.com)>  
Subject: RE: Huawei/Samsung - Improper Rebuttal

Dave,

We disagree with your characterization of Samsung's rebuttal reports and the alleged withholding of arguments. Nevertheless, in the hope that we can avoid a dispute, we are looking into your request.

To help us do that, please let us know more about the limited supplemental reports that Huawei would like to serve, namely which experts would serve such reports, approximately how many pages you would expect each supplemental report to include, and when you would plan to serve them.

With that information in hand, we should be able to get back to you early evening today.

Best,

Tom

**From:** Giardina, David C. [<mailto:dgiardina@sidley.com>]  
**Sent:** Thursday, May 31, 2018 9:24 PM  
**To:** Thomas Pease <[thomaspease@quinnmanuel.com](mailto:thomaspease@quinnmanuel.com)>; Bettinger, Mike <[mbettinger@sidley.com](mailto:mbettinger@sidley.com)>; Yang, Irene <[irene.yang@sidley.com](mailto:irene.yang@sidley.com)>  
**Cc:** QE\_Huawei v. Samsung <[QE\\_Huaweiiv.Samsung@quinnmanuel.com](mailto:QE_Huaweiiv.Samsung@quinnmanuel.com)>; Huawei-Samsung Sidley <[Huawei-Samsung-Sidley@sidley.com](mailto:Huawei-Samsung-Sidley@sidley.com)>  
**Subject:** RE: Huawei/Samsung - Improper Rebuttal

Tom –

In reviewing Samsung's rebuttal reports, it appears that Samsung withheld a number of arguments that could and should have presented in its opening reports in seeming attempt to shield those arguments from scrutiny. We believe that Dr. Leonard and Prof. Hausman introduced, for the first time, several arguments that should have been included in Samsung's opening round of expert reports because they pertain to issues on which Samsung bears the burden of proof (specifically Samsung's breach of contract and antitrust claims). These improper rebuttal arguments include:

- Dr. Leonard's and Prof. Hausman's FRAND opinions that are based on allegedly comparable licenses (including the **Huawei-Apple license**). These licenses were produced to Samsung well before the start of the expert discovery period (and, in the case of the **Huawei-InterDigital and Huawei-Apple licenses**, were issues that Samsung had raised during pre-suit negotiations years ago). The manner in which Dr. Leonard and Prof. Hausman use these license agreements (e.g., in arguing that Huawei's offers have been unreasonable and discriminatory) clearly is directed to Samsung's breach of contract counterclaim, and therefore should have been raised during opening reports.
- Dr. Leonard's citation-based analysis of the Huawei and Samsung portfolios, which was omitted from Dr. Leonard's opening report despite the fact that Dr. Leonard has used a similar type of analysis in prior cases and the citation information was available to him to conduct such an analysis in his opening report in this case. Instead, Dr. Leonard chose to use declared patent counts in his opening report, with no forward citation

analysis conducted on those patents (despite his ability to utilize that methodology at that stage if he chose to do so).

- Dr. Leonard's defense of Samsung's pre-suit offer to Huawei, which was not discussed in any of Samsung's opening expert reports. In briefing to the Court related to its motion for an anti-suit injunction, Samsung argued that "[a] determination that Huawei failed itself to comply with its FRAND obligations will be dispositive of Huawei's breach of contract cause of action." Dkt. 287. By that same token, all information regarding Samsung's compliance with its FRAND obligations should have been included in Samsung's opening reports, including a defense of Samsung's own pre-suit offer. However there was no discussion whatsoever in defense of Samsung's July 2015 offer in Dr. Leonard's and Prof. Hausman's opening reports; rather, the defense appeared for the first time in the rebuttal stage, despite the fact that, by Samsung's reasoning, establishing its own compliance with its FRAND obligations is integral to Samsung's affirmative FRAND claims.

Because these arguments were not properly raised during Samsung's opening expert reports, Huawei's experts will be deprived of an opportunity to respond. The lack of such a full and fair opportunity to address these arguments will prejudice Huawei. Accordingly, Huawei requests the opportunity to submit promptly limited supplemental reports addressing the points identified above. If we cannot reach an agreement in this regard, we intend to move to strike these improper opinions from Samsung's rebuttal reports or, in the alternative, for leave to serve supplemental reports.

Given that depositions are upcoming, we would appreciate it if you could provide Samsung's position by the close of business tomorrow. If we cannot agree on Huawei's service of limited supplemental reports, please provide Samsung's availability for a lead counsel meet and confer next week.

Thanks,  
Dave

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**EXHIBIT 18**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**

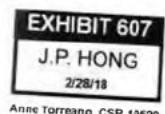


REUTERS/John Nacion

## PATENT ANALYSIS OF LTE STANDARDS FINAL PRESENTATION

Prepared for:

Samsung Electronics



August 20, 2014



THOMSON REUTERS

CONFIDENTIAL

SAMSUNG-HNDCA-000116788

## PROJECT OVERVIEW

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### **Objective**

- Assessing competitive strengths of various companies in the LTE technology

### **Target patents for analysis**

- 10,064 US issued patents and published application

### **Methodology**

- Rating each patent based on overlap with Standard specifications
- Finding relevant technical contribution(s) for each patent
- Statistical analysis of LTE standards contributions from RAN, SA, and CT working groups

### **Timeline**

- Project duration: 25 weeks
- Project completion date: July 31, 2014

## PROJECT OVERVIEW

### METHODOLOGY

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#### **Criteria of rating each patent**

- 'A' : The patent is believed to be highly relevant / essential to the LTE standards.
- 'B' : The patent is relevant to the LTE standards, but may or may not be essential / Further in-depth study may be required to find complete evidence of essentiality / The patent may not be essential with respect to the current LTE standard but likely to be essential in the future.
- 'C' : The patent is related to the LTE standards, but unlikely to be essential.
- 'D' : The patent is not believed to be related to the LTE standards.

#### **Finding relevant technical contribution(s) for each patent**

- Study to determine relevant technical contribution(s) for each patent rated as A, B, or C
- Search for technical contributions to be performed on the 3GPP website

#### **Analysis of LTE standards contributions from RAN, SA, and CT working groups**

- Provide the number of contributions for the top 10 companies
- Provide the number of approved contributions for the top 10 companies

**EXHIBIT 20**

**DECLARATION OF LEIF PETERSON IN SUPPORT OF HUAWEI'S OPPOSITION TO  
SAMSUNG'S MOTION TO PARTIALLY EXCLUDE AND STRIKE**

**UNREDACTED VERSION OF DOCUMENT SOUGHT TO BE SEALED**



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# Samsung & Huawei Patent License Discussion



May 20, 2015

Samsung Electronics



CONFIDENTIAL

HW\_Samsung\_00692898

EXHIBIT 644

HJ CHANG

3/2/18

Anne Torreano, CSR 10520

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## Samsung's Position

- **The value and strength of SEP portfolio should be determined based on the following factors**
  - Standard Activity and Contribution
  - LTE SEP Family Size
  - Forward Citation & The Quality of SEP
  - The Weight of LTE SEP & Patent Essentiality
  - Other SEPs' field (e.g. WiFi, HEVC)



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HW\_Samsung\_00692900

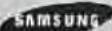
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## Assessment of LTE patent strength

### 4) The weight of LTE SEPs

- Samsung's LTE patents are mainly related to Air Interface protocol, while Huawei's patents are related to Network Interface protocol area.
  - ☞ RAN, CT & SA Contributions' Distribution
  - In view of the fact that most of SEP used in large scale litigations relating to Air Interface Protocol, Samsung SEP' portfolio is much more powerful than Huawei's portfolio.

☞ NAR Labs report



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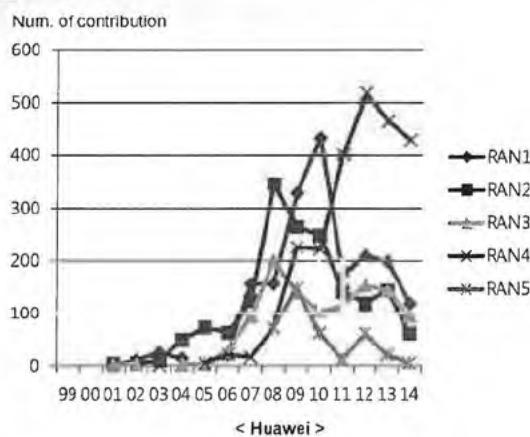
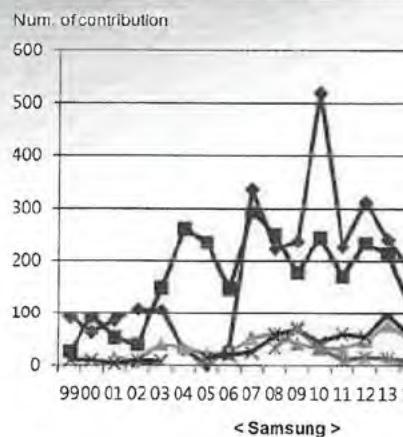
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## LTE Contribution Distribution

### Count of Working Groups - RAN



- Samsung's contributions have been mainly distributed on RAN1 and RAN2 areas.
- However, Huawei has been focused on RAN3, RAN4 and RAN5 in comparison with Samsung.

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